OKIDATA®

Service Manual

OKIPAGE 16n
LED Page Printer

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1.1 System Configuration

OKIPAGE16n / OKIPAGE16n/PS consists of control and engine blocks as the standard configuration (See Figure 1-1.)

In addition, the following options are also available.

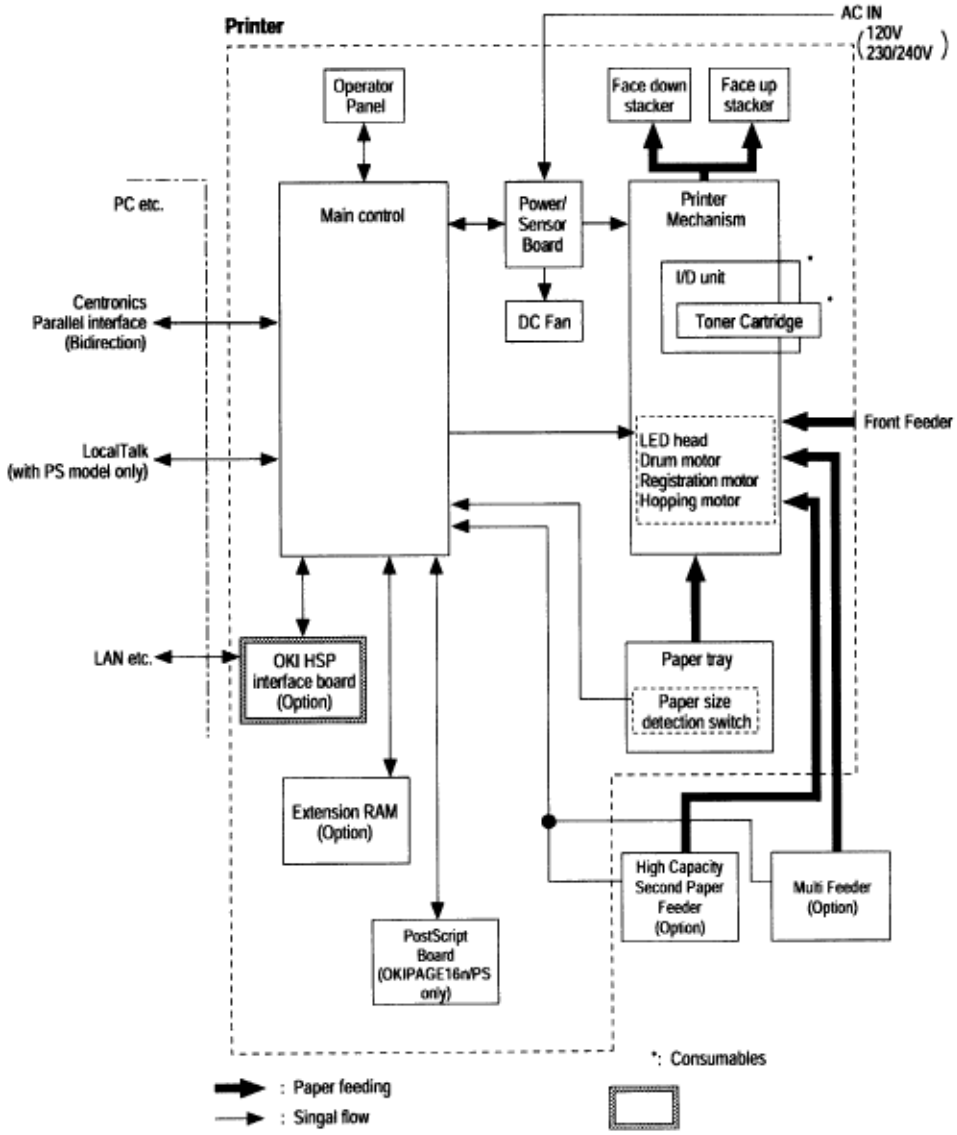

Figure 1-1

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1.2 Printer Configuration

The printer unit consists of the following hardware components:

- Electrophotographic processor
- Paper feeder
- Controller
- Operator panel
- Power Supply board

Figure 1-2 shows the printer unit configuration.

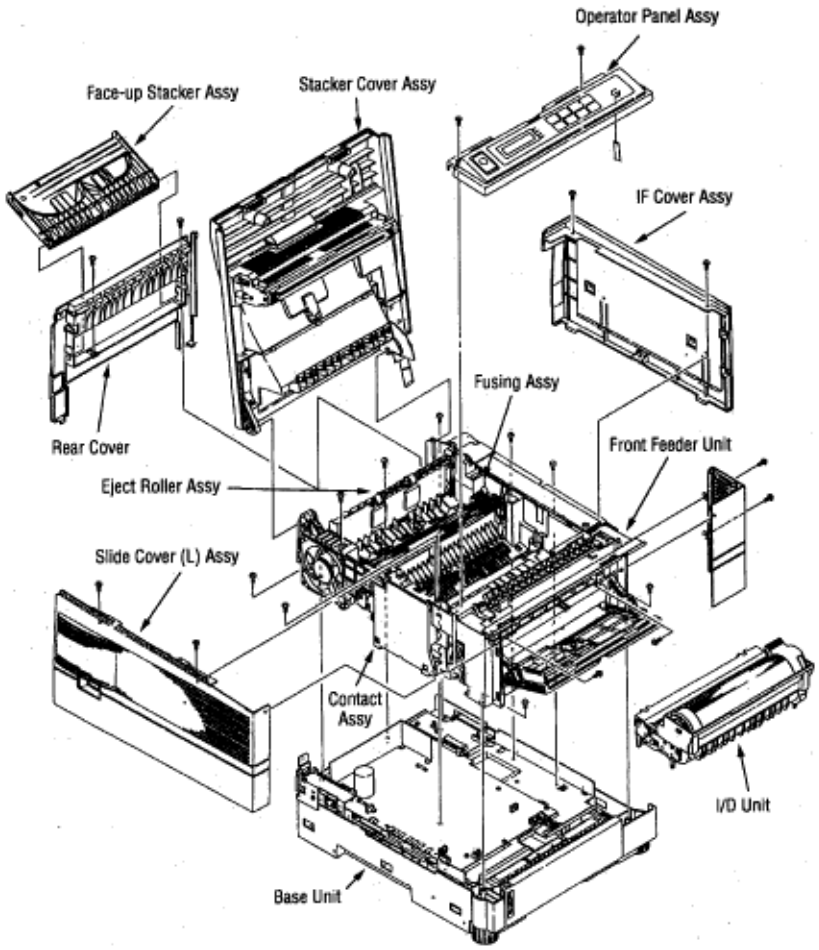

Figure 1-2

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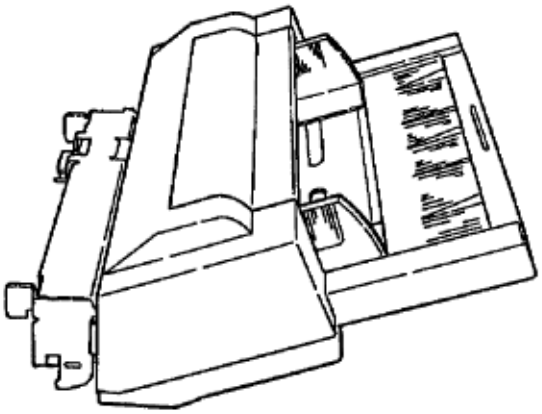
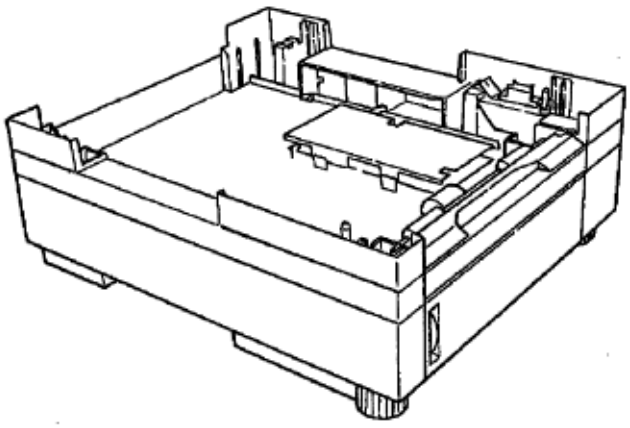
1.3 Optional Configuration

The options below are available for use with OKIPAGE16n / OKIPAGE16n/PS. They are sold separately from the printer unit.

(1) Multi-Purpose Feeder

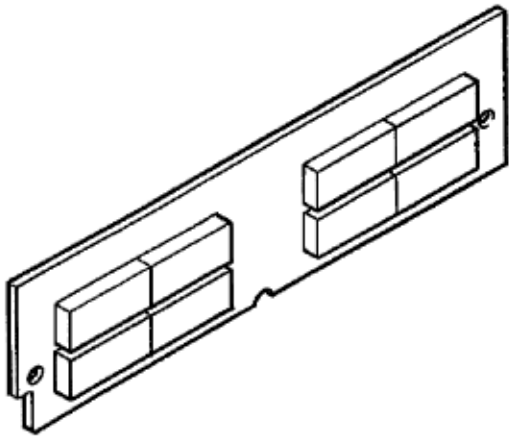


(2) High Capacity Second Paper Feeder

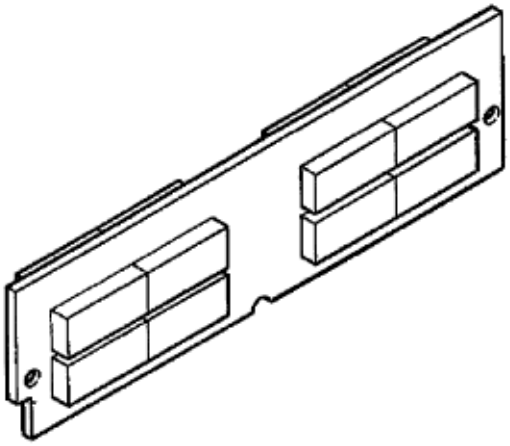


(3) RAM module (72 pin SIMM, 1 MB/2 MB/4 MB/8 MB/16 MB/32 MB)

- 16 MB RAM module



- 8 MB RAM module



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1.4 Specification

(1) Type	Desk top
(2) External dimensions (excludes protruding Portion)	Height 10.6" (270 mm) Width 14.4" (366 mm) Depth 16.9" (430 mm)
(3) Weight	15.2 kg (33.5 lbs)
(4) Development method Exposure method	Dry electrophotography LED stationary head

(5) Paper used <Type>

- Standard paper

  - Xerox 4200 (20 lbs)

- Application paper (manual face-up feed)

  - Label
  - Envelope
  - OHP paper (Transparency)

<Size>

- Standard sizes

  - Letter
  - Legal
  - Executive
  - Envelope
  - A4
  - A5
  - B5
  - A6

- Applicable sizes
  - Width: 3.4" to 8.5" (86 to 216 mm)
  - Length: 5.5" to 14" (140 to 355.6 mm)

  <Thickness>

- Automatic feed:	16 to 28 lbs (60 to 105 g/m 2)
- Manual feed:	Label, OHP paper (transparency) Envelope

(6) Printing speed
First print: 10 sec.
Continuous print:
16 sheets/min.
Warm-up time:
90 sec. [at room temperature 77°F (25°C) and rated voltage (120 VAC)]

(7) Paper feed method
Automatic feed or manual feed

(8) Paper delivery method
Face down/face up

(9) Resolution
600 x 600 dots/inch

(10) Power input
120 VAC + 5.5%, -15%
230/240 VAC + 10%, -14%

(11) Power consumption
Peak: Approx. 600W
Typical Operation: Approx. 220W
Idle: Approx. 100W
Power save mode: Approx. 20W

(12) Temperature and humidity

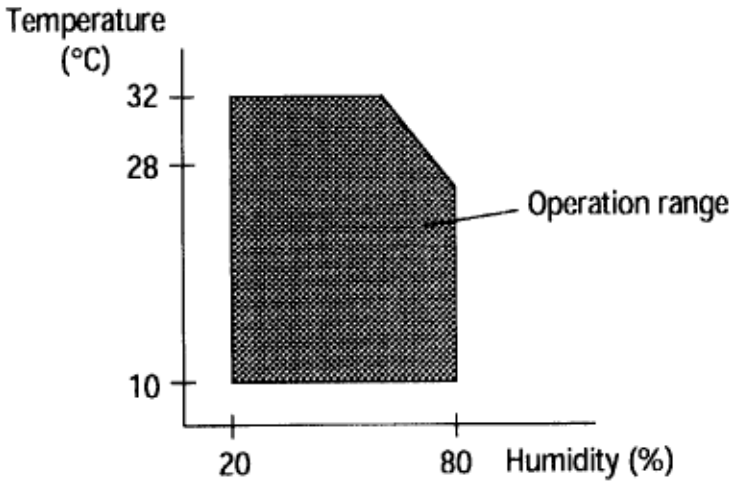
	In operation	Power off mode	During Storage	Unit
Temperature	50 - 90 (10 - 32)	32 - 110 (0 - 43)	14 - 110 (-10 - 43)	Degree F Degree C
Humidity	20 - 80	10 - 90	10 - 90	%RH
Maximum wet bulb temperature	77 (25)	80.4 (26.8)	_____	Degree F Degree C
Minimum difference of wet and dry bulb temperature	35.6 (2)	35.6 (2)	_____	Degree F Degree C

Temperature 50 - 90 32 - 110 14 - 110 °F
In operation Power off mode During Storage Unit
Maximum wet
bulb temperature
Minimum difference
of wet and dry
bulb temperatures
Humidity
35.6 35.6 °F
77 80.4 °F
(10 - 32) (0 - 43) (–10 - 43) (°C)
20 - 80 10 - 90 10 - 90 %RH
(25) (26.8) (°C)
(2) (2) (°C)

Notes:

1. Storage conditions specified above apply to printers in packed condition.

2. Temperature and humidity must be in the range where no condensation occurs.



(13) Noise	During operation: 50 dB (A) or less
At standby:	45 dB (A) or less
Power save mode:	43 dB (A) or less
(14) Consumables	Toner cartridge kit 5,000 (5% duty)
	Image drum cartridge 30,000 (at continuous printing)
	18,000 (3 page/job)
	11,000 (1 page/job)

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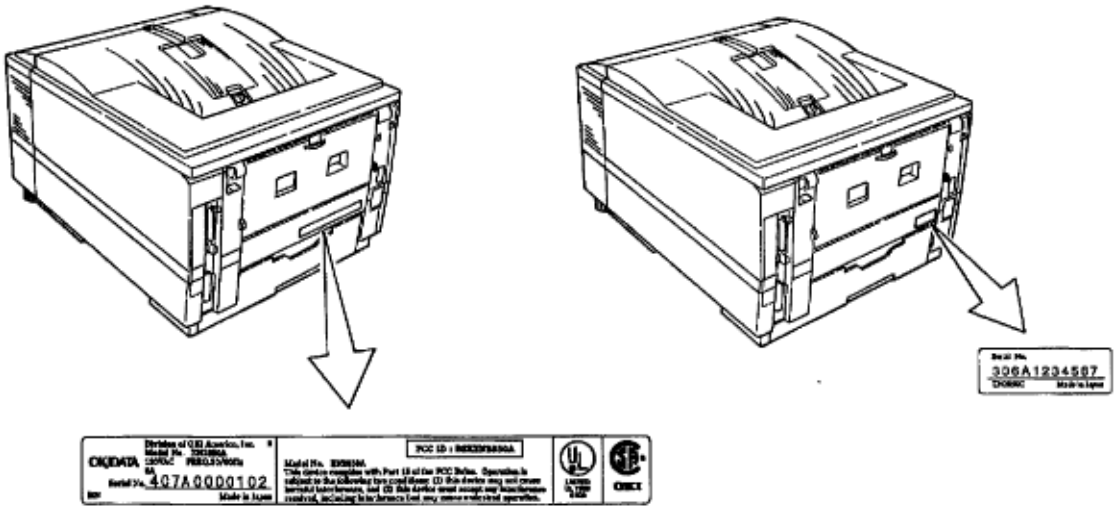
1.5 Safety Standards

1.5.1 Certification Label

The safety certification label is affixed to the printer in the position below.



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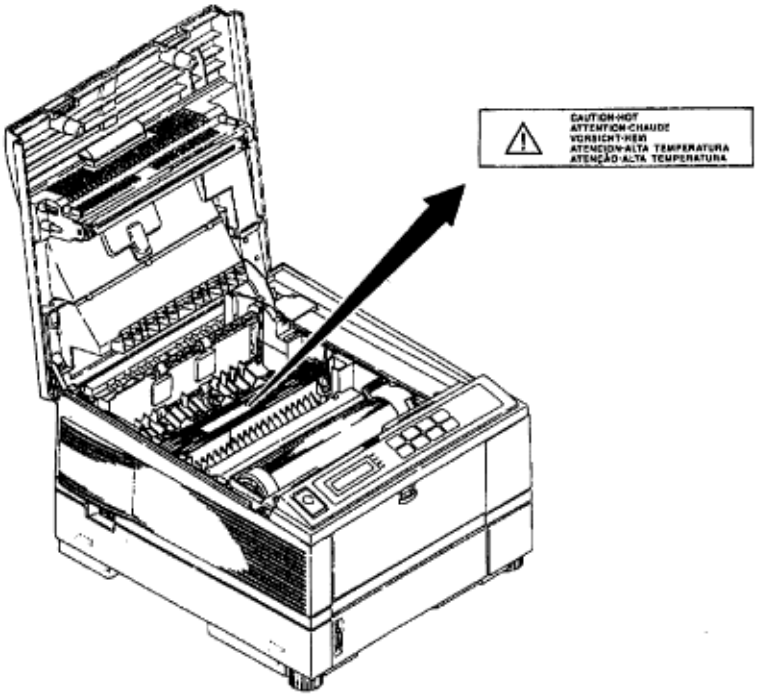
1.5.2 Warning Label

The warning label is affixed to the portion which may cause bodily injury.

Follow the instructions on warning labels during maintenance.



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2. OPERATION DESCRIPTION

OKIPAGE16n / OKIPAGE16n/PS consists of a main control board, a power supply board, a driver board, an operator panel and an electrophotographic process mechanism.

The control board receives data through a host I/F, decodes and edits the data, and stores the edited data in memory. After completing edition of one page of data, it references the font memory and generates bit data on the same memory. At the same time, it transfers the bit image data to the LED head in units of one dot line.

The electrophotographic process mechanism prints data on paper.

The operator panel is used for operations and status display.

Fig. 2-1 shows an OKIPAGE16n / OKIPAGE16n/PS block diagram.

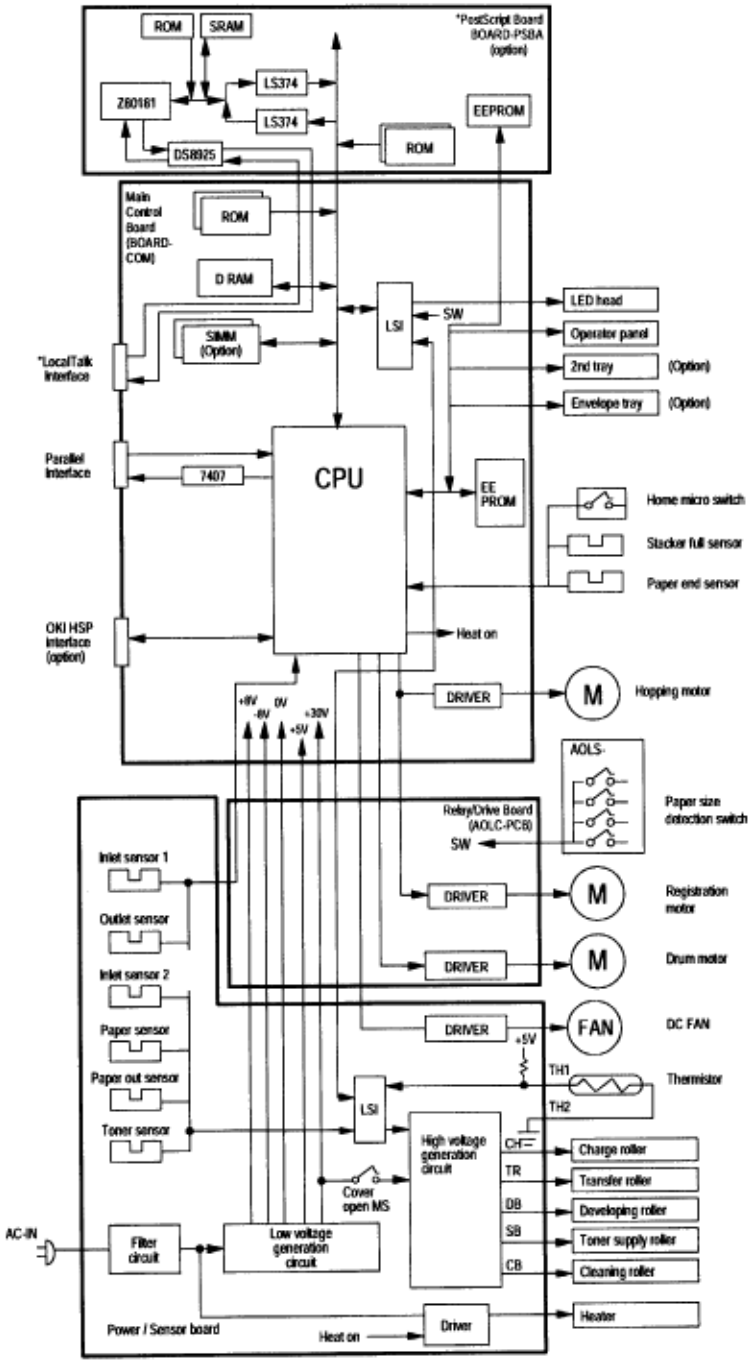

Figure 2-1 OKIPAGE16n / OKIPAGE16n/PS block diagram

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2.1 Main Control Board (BOARD-COM)

The control board consists of an one chip CPU, LSIs, program/font ROM's, DRAM's, an EEPROM, a host interface circuit, and a mechanism driving circuit.

(1) One-chip CPU

The one-chip CPU is a custom CPU (32-bit internal bus, 32-bit external bus, 32-MHz clock) that incorporates an RISC CPU and its peripheral devices, and has the following functions.

Built-in device	Function
Chip select controller Bus controller DRAM controller	Control of ROM, DRAM and I/O device
DRAM controller	Transfer of image data from DRAM to OST LSI
Parallel interface controller	Control of Centronics parallel interface
Timer	Generation of various control timing Monitoring of paper running and paper size
Serial I/O port	Control of operator panel, EEPROM, and options
I/O port	Inputting/outputting of sensor, signal and motor signal
Option I/O interface	Control of OKI HSP interface

(2) Program/font ROM's

The program/font ROM's store the HP IV emulation program and various types of font. MASK ROM is used as the program/font ROM's.

(3) DRAM's
2-Megabyte DRAM (4 Mbit DRAM x 4) is mounted as resident memory to be used for storing the program and providing various buffers. This DRAM is expandable up to 66 Mbytes by adding expansion memory (SIMMs). This DRAM provides the areas shown in the following table.

Memory area	Use	MENU	Memory capacity setting Expansion RAM
System area	Working area used for the program	Fixed	Fixed
Raster buffer	Stores converted bit image data	Enable	Expandable
Receive buffer	Stores temporarily the data received from the host interface	Enable	Expandable
Page buffer	Adds print information to the analyzed receive data and stores the resulted data.	-	Expandable
DLL/macro buffer	Stores soft fonts and macro data.	-	Expandable

Font cache buffer	Stores bit map fonts generated by the font rasterizer based on scalable font information	Enable	Expandable

(4) EEPROM

The EEPROM has a 1-kbit capacity and stores the following data.

- Menu data
- Various counter data (page counter, drum counter, fuser counter, etc.)
- Adjustment parameters (LED head drive time, print start position, etc.)

(5) LSI (MBCE31701-040FP-BND)

This LSI is used as a peripheral device of the CPU and performs smoothing compensation (OST) of print image data. In addition, it transfers serially bit image data for each dot line to the LED head.

(6) Host interface

This printer has the following interfaces to the host.

- Centronics bi-directional parallel interface
- OKI HSP interface (Option)
- LocalTalk interface (Option - PostScript Version)

The single effective interface or the automatic interface select mode can be selected using the menu. If the busy state of the printer continues for a long time period, the buffer near-full control releases the busy status at constant intervals even if the host side is busy so not to cause the interface time-out at the host side.

(a) Centronics bi-directional parallel interface

This is an interface conforming to IEEE-1284 and provides either of unidirectional and bi-directional communications according to each of the following communication modes.

- Compatibility mode
  Unidirectional communications from the host to the printer.

- Nibble mode
  This mode transmits 4-bit wide data from the printer to the host. In this mode, each 1-byte data is transferred in the form of two nibbles using ERROR, BUSY, FAULT, and SELECT signal leads. This mode can provide the bi-directional operation in combination with the compatibility mode.

- ECP mode
  This mode provides the asynchronous bi-directional interface and transmits and receives 1-byte data using eight data signal leads under the semi-duplex control by the host.

When the power is turned on, the compatibility mode is automatically selected. The change to another mode from the compatibility mode is made through negotiation. (When the BI DIRECTION is set to ENABLE in the menu, this change can be performed.)

(For the electrical/physical characteristics of this interface, see APPENDIX A)

(b) OKI HSP interface (Option)

This interface (slot) is an OKI unique universal interface that provides the platform to connect various boards (such as the LAN connection expansion board and SCSI expansion board).

Any expansion boards compatible with this interface can be mounted on the Control board in the piggyback board without modifying the program at the printer side. The conceptual diagram of the OKI HSP interface is shown in Fig. 2-2.

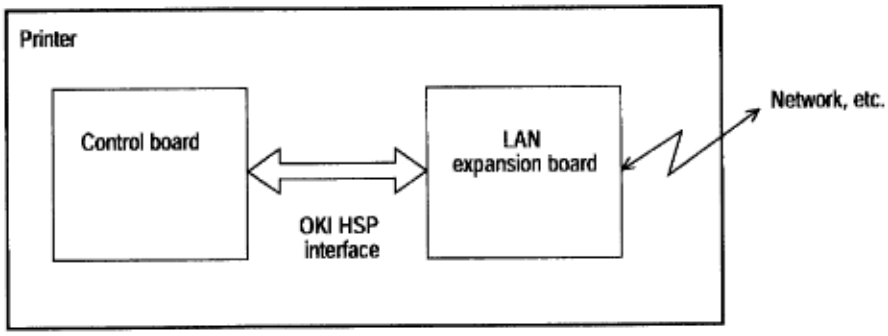
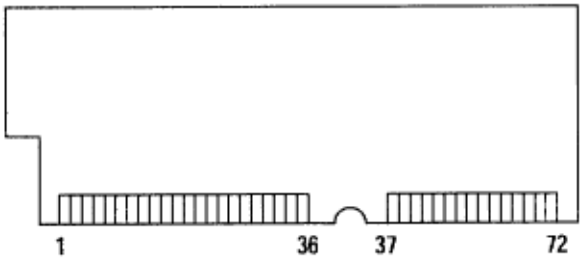


Fig. 2-2

(7) RAM module



- Pin layout
- Basic specification
  - Type: 72 pins SIMM (32 bits buss width)
  - Access time: 60ns, 70ns, 80ns, 100ns
  - Capacity: 1, 2, 4, 8, 16 or 32MB
  - Parity: None

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2.2 Power Supply Board

The power supply board consists of an AC filter circuit, a low voltage power supply circuit, a high voltage power supply circuit, heater drive circuit, and photosensors.

(1) Low voltage power supply circuit

This circuit generates the following voltages.

Output voltage	Use
+5 V	Logic circuit supply voltage
+30 V	Motor and fan drive voltage and source voltage for high-voltage supply
+8 V	Reset circuit
-8 V	Local Talk Line voltage

(2) High voltage power supply circuit

This circuit generates the following voltages necessary for electrophotographic processing from +30 V according to the control sequence from the control board. When cover open state is detected, +30 V supply is automatically interrupted to stop the supply of all the high-voltage outputs.

Output	Voltage	Use Remarks	Remarks
CH	-1.30 KV	Voltage applied to charging roller	
DB	-240 V/+300 V	Voltage applied to developing roller	
SB	-360 V/450 V	Voltage applied to toner supply roller	
TR	+4 KV/-1.3 kV	Voltage applied to transfer roller	Variable
CB	+400 V	Voltage applied to cleaning roller	

(3) Photosensor

The photosensor mounted on this power supply board supervises the paper running state during printing.

Figure 2-3 shows the sensor layout diagram.

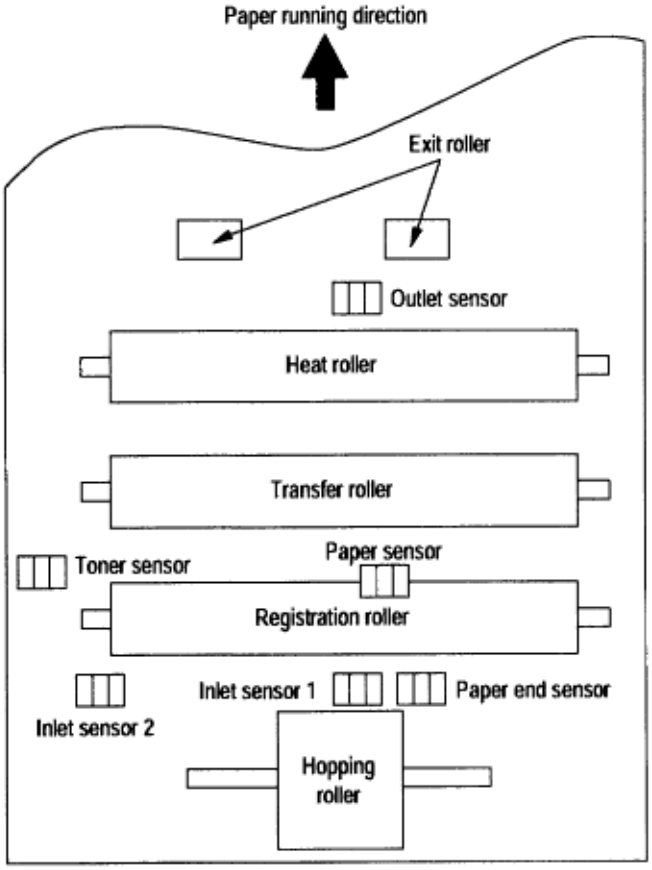

Figure 2-3

Sensor	Function	Sensing state
Inlet sensor 1	Detects the leading part of the paper and gives the supervision timing for switching from hopping operation to feeding operation. Supervises the paper running state and the paper size according to the paper reach time and running time.	ON: Paper exists. OFF: No paper exists.
Inlet sensor 2	Detects the form width.	ON: A4 or larger OFF: Smaller than A4
Paper sensor	Detects the leading part of the paper. Supervises the paper running state.	ON: Paper exists. OFF: No paper exists.
Outlet sensor	Supervises the paper feed and size according to the time of arrival to the sensor and the time of passage of paper.	ON: Paper exists. OFF: No paper exists.
Paper end sensor	Detect the end of the paper.	ON: Paper exists. OFF: No paper exists.
Toner low sensor	Detects the lack of toner.	ON long: Toner low exists OFF short: No Toner low exists

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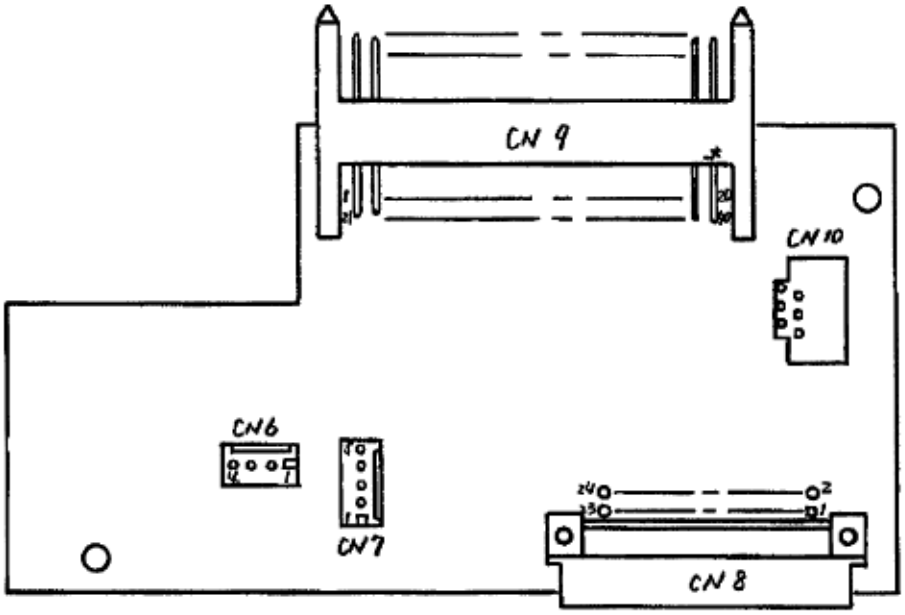
2.3 Relay/Driver Board (AOLC board)

This board relays signals between the Control board and the Power supply board and includes the registration motor and drum motor driver IC.



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2.4 Electrophotographic Process

2.4.1 Electrophotographic process mechanism **(see).**

2.4.2 Electrophotographic process **(see).**

2.4.3 Process operation description **(see).**

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2.4.1 Electrophotographic process mechanism

This mechanism prints image data from the control board on the paper by electrophotographic process.

The Figure 2-4 shows the layout of the electrophotographic process mechanism.

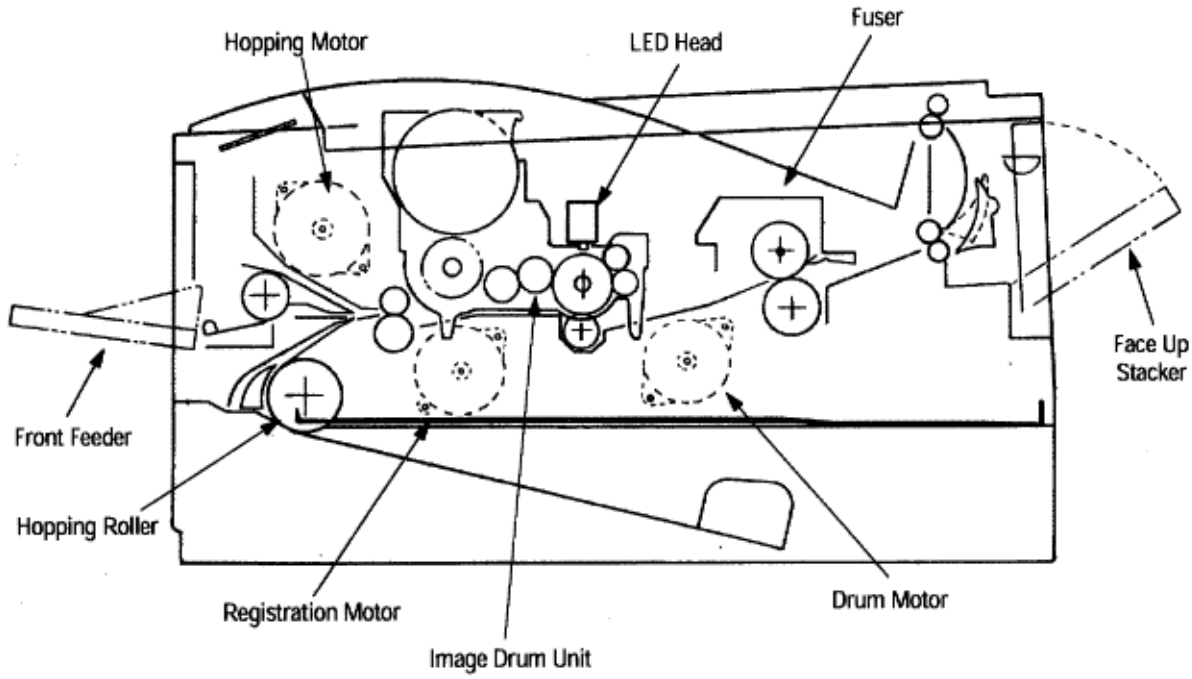

Figure 2-4

(1) Image drum unit

The image drum unit consists of a sensitive drum, a charger, and a developer. The unit forms a toner image on the sensitive drum, using a electrostatic latent image formed by the LED head.

(2) Hopping motor

This motor is a pulse motor of 48 steps/rotation that is two-phase excited by the signal from the control board. It drives the hopping roller of the first tray and the front feed roller via two one-way clutches according to the direction of rotation.

(3) Registration motor

This motor is a pulse motor of 48 steps/rotation that is two-phase excited by the signal from the control board. It drives the registration roller.

(4) Drum motor

This drum motor is a pulse motor of 48 steps/rotation that is two-phase excited by the signal from the control board and is the main motor of this mechanism.

(5) LED head

Image data for each dot line from the control board is received by the shift register and latch register. The 4992 LEDs are driven to radiate the image data to the image drum.

(6) Fuser

The fuser consists of a heater, a heat roller, a thermistor and a thermostat.

An AC voltage from the power supply board is applied to the heater under the control of the HEATON signal from the control board. This AC voltage heats the heater. The control board supervises the heat roller temperature via the thermistor, and regulates the heater roller at a predetermined temperature (185 ~ 188°C) by connecting or disconnecting the AC voltage supply to the heater.

If the heater roller temperature rises abnormally, the thermostat of the heater voltage supply circuit is activated to cut the AC voltage supply immediately.

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2.4.2 Electrophotographic process

The electrophotographic processing is outlined below. Figure 2-5 shows the electrophotographic printing process.

1 Charging

The surface of the image drum is uniformly charged with negative charges by applying a negative voltage to the charge roller.

2 Exposure

Light emitted from the LED head irradiates the negatively charged surface of the image drum. The surface potential of the irradiated part of the image drum surface is lowered, so that an electrostatic latent image associated with the print image is formed.

3 Developing and toner recovery

When the negatively charged toner is brought into contact with the image drum, it is attracted to the electrostatic latent image by static electricity, making the image visible.
At the same time, the residual toner on the image drum is attracted to the developing roller by static electricity.

4 Transfer

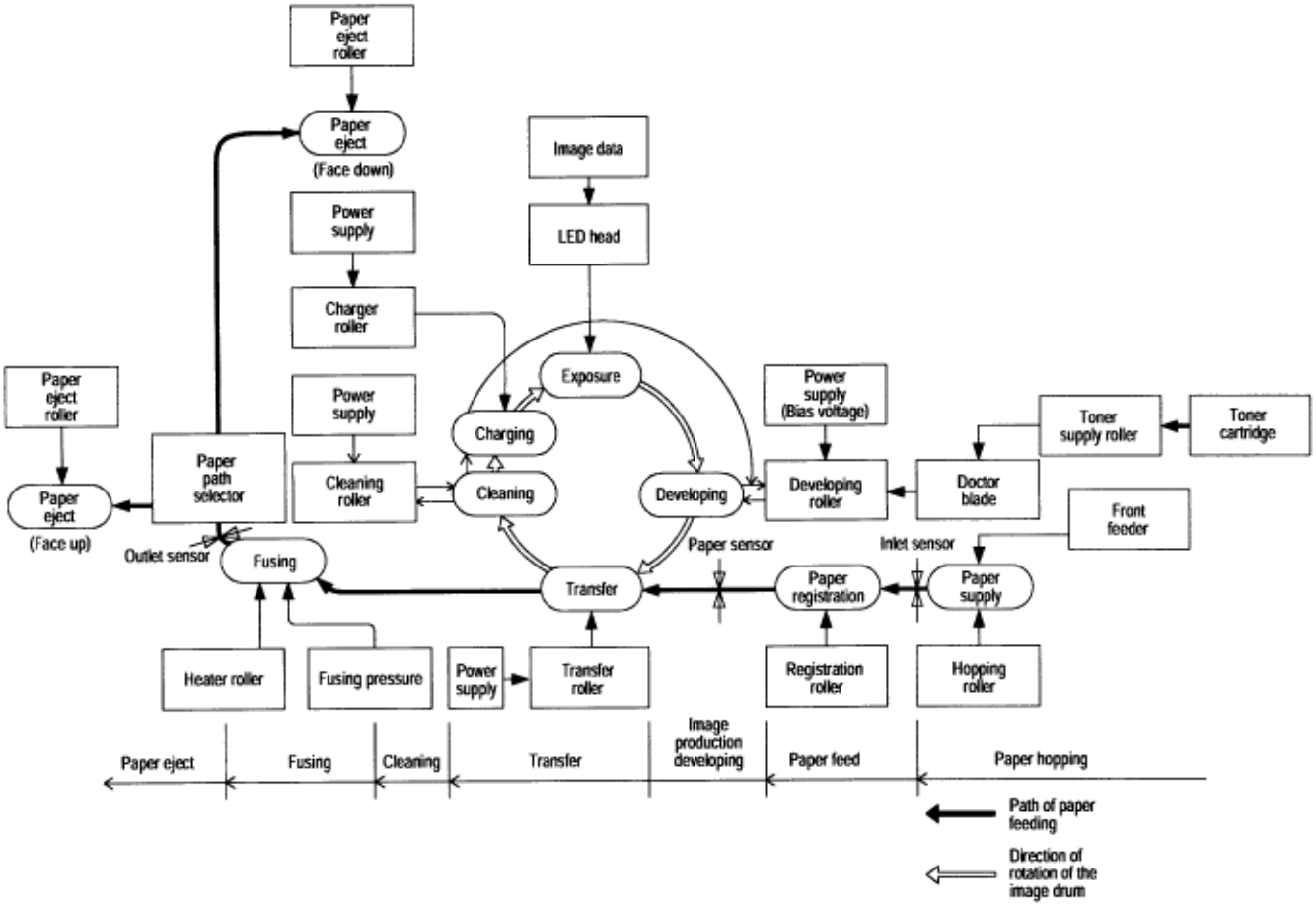
When paper is placed over the image drum surface and a positive charge, opposite in polarity to the toner, is applied to the reverse side of the paper from the transfer roller, the toner is attracted by the positive charge and is transferred to the paper. As a result, the toner image formed on the image drum is transferred to the paper.

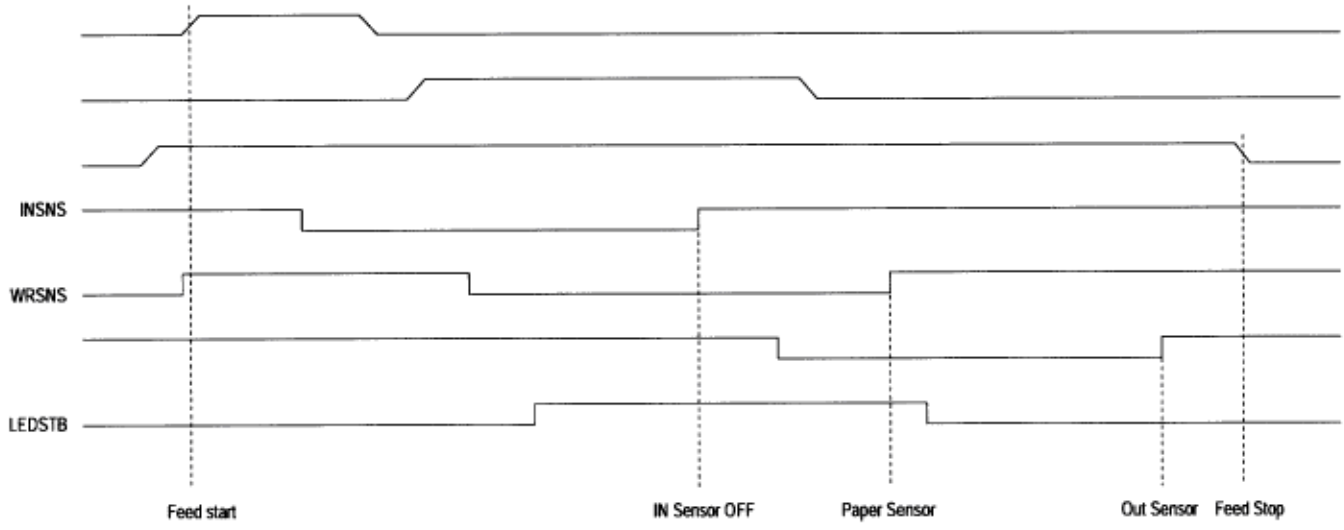
5 Temporary cleaning

Residual toner that remains on the image drum without being transferred is made uniform by the cleaning roller and is temporarily attracted to the cleaning roller by static electricity.

6 Fusing

The toner image transferred to the paper is fused under heat and pressure.
Figure 2-6 shows an electrophotographic process timing chart.





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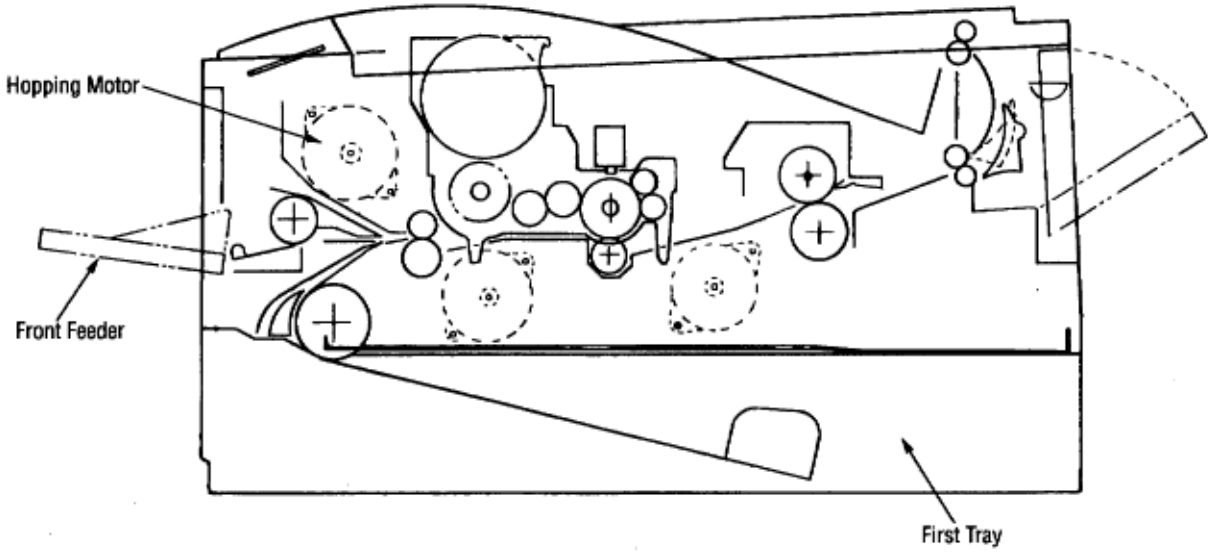
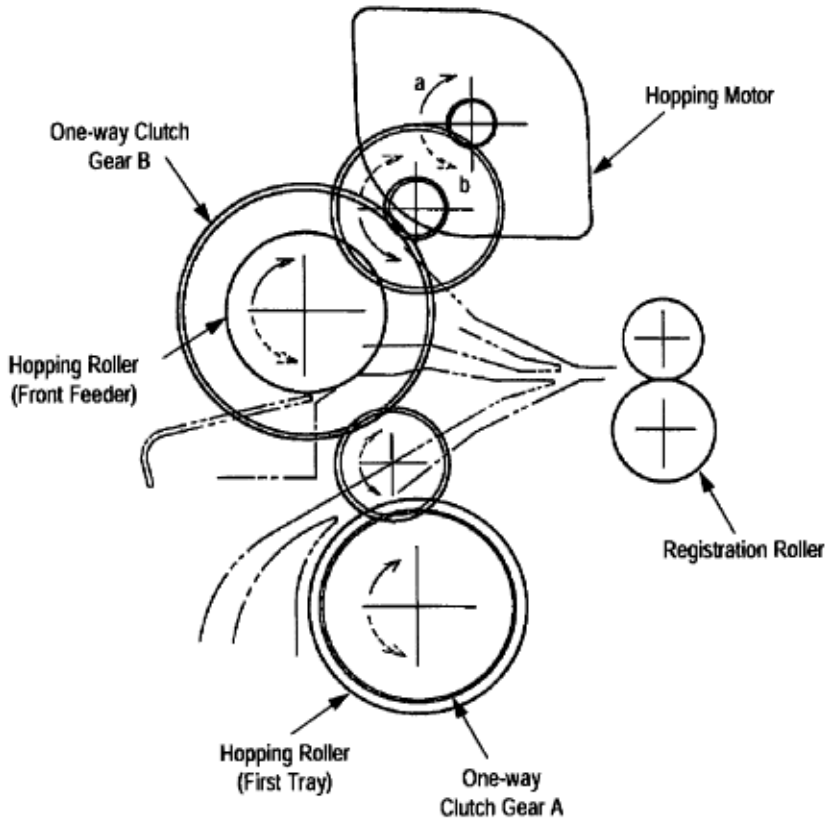
2.4.3 Process operation descriptions

(1) Hopping

Feeding from the first tray and the front feeder are effected by a single hopping motor in the mechanism shown below.



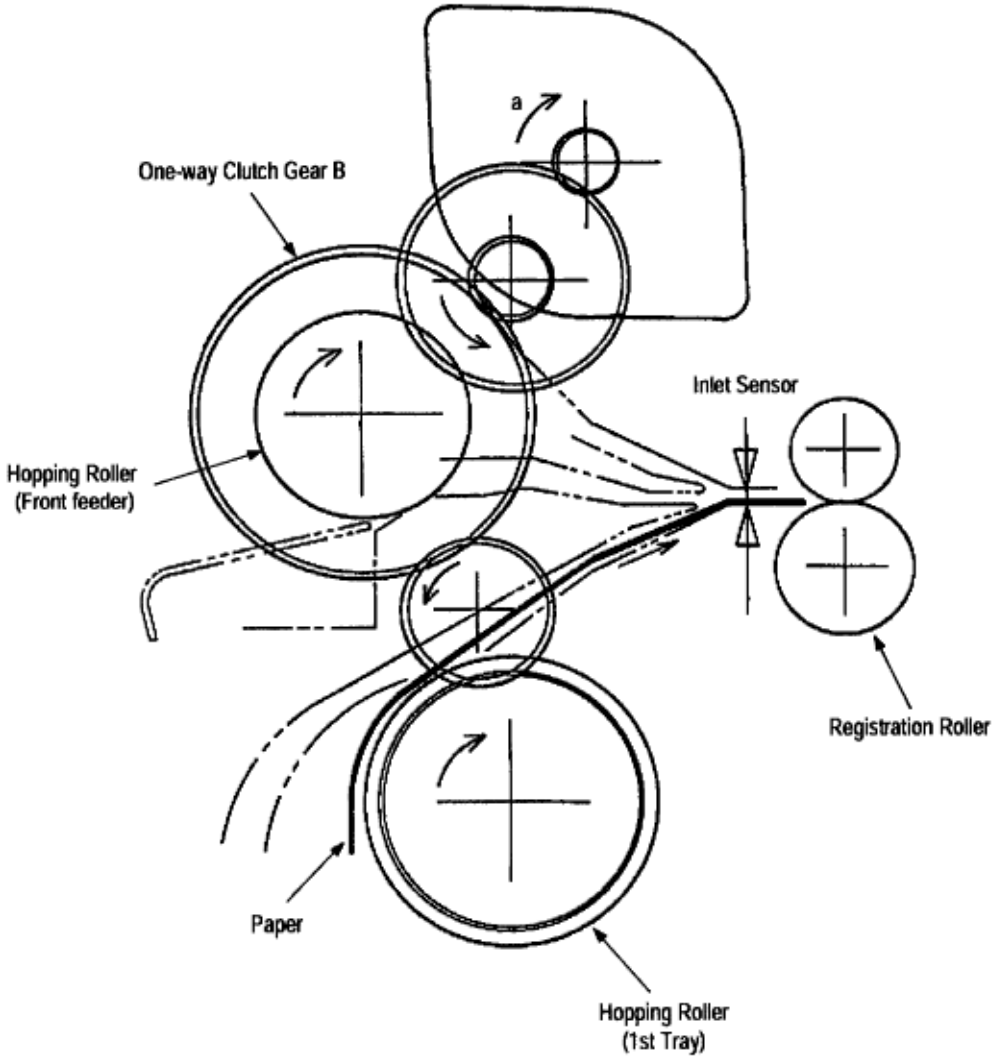
Turning the Hopping motor in the "a" direction drives the hopping roller of the first tray.
Turning the Hopping motor in the "b" direction drives the Hopping roller of the front feeder.
Both hopping gears contain one-way bearings, so that turning each of these gears in reverse direction will not be transmitted to the corresponding roller.



(a) Hopping (1st tray)

1. Rotating the pulse motor in the direction a (clockwise [CW] direction) drives the hopping roller of the first tray to advance the paper until the inlet sensor turns on. At the same time, the one-way clutch gear B also rotates. However, the hopping roller of the front feeder will not rotate due to the one-way bearing.

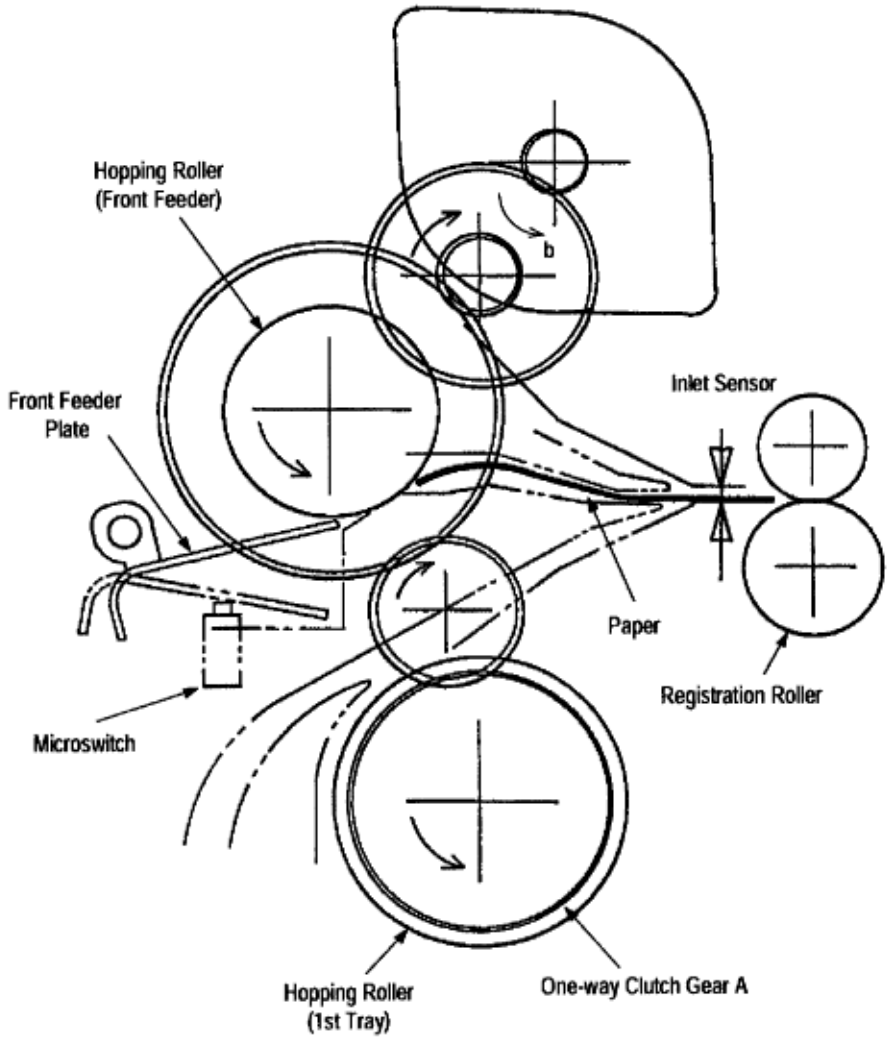
2. After turning on the inlet sensor, the paper advances further by a predetermined length until it hits the registration roller. (The skew of the paper can thus be corrected.)



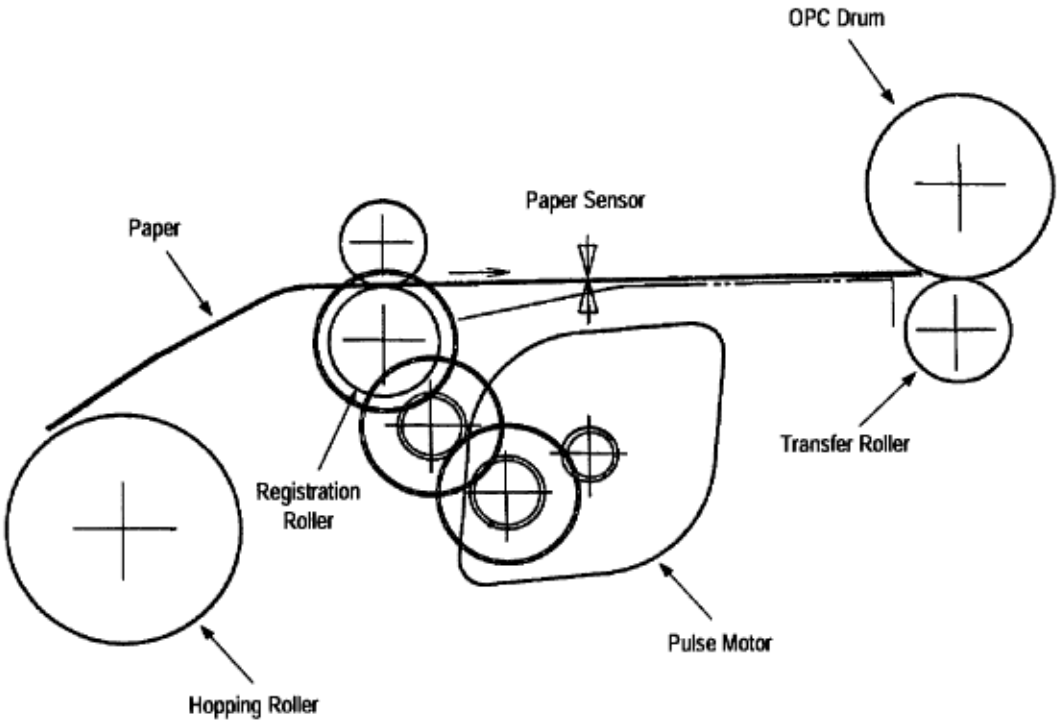
(b) Hopping (front feeder)

1. Rotating the pulse motor in the direction b (counterclockwise [CCW] direction) drives the hopping roller of the front feeder to advance the paper until the inlet sensor turns on. At the same time, the one-way clutch gear A also rotates. However, the hopping roller of the 1st tray will not rotate due to the one-way bearing.

   A cam to push down the front feeder plate is attached on each of the ends of the hopping roller shaft. These cams push down the front feeder plate when the hopping operation is not performed so as to facilitate the setting of paper into the tray. A microswitch is provided under the front feeder plate to detect that the front feeder plate is at the lower position. When the front feeder plate is at the lower position, this microswitch causes the motor to stop.



2. After turning on the inlet sensor, the paper advances further by a predetermined length until it hits the registration roller. (The skew of the paper can thus be corrected.)



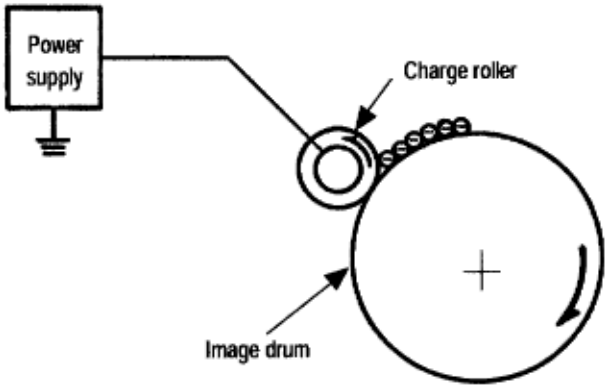
(2) Feeding

After the end of hopping, the pulse motor dedicated for driving the registration roller rotates to drive the registration roller. The driven registration roller advances the paper until it comes out of the registration roller.

When the leading edge of the paper causes the paper sensor to turn on, the printing is started synchronously.

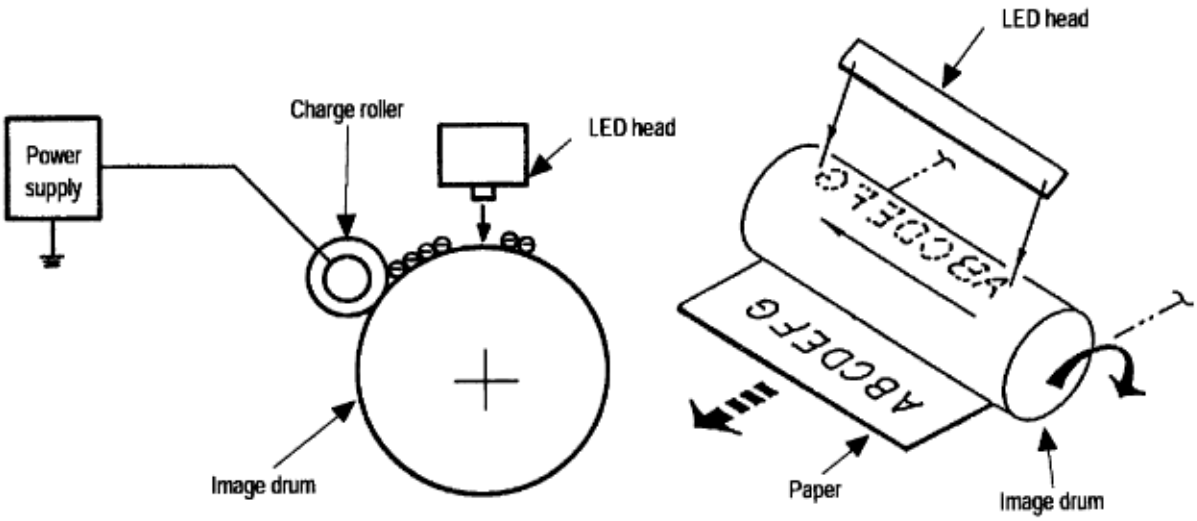
(3) Charging

Charging is effected by applying a DC minus voltage to the charge roller that is in contact with the image drum surface.



(4) Exposure

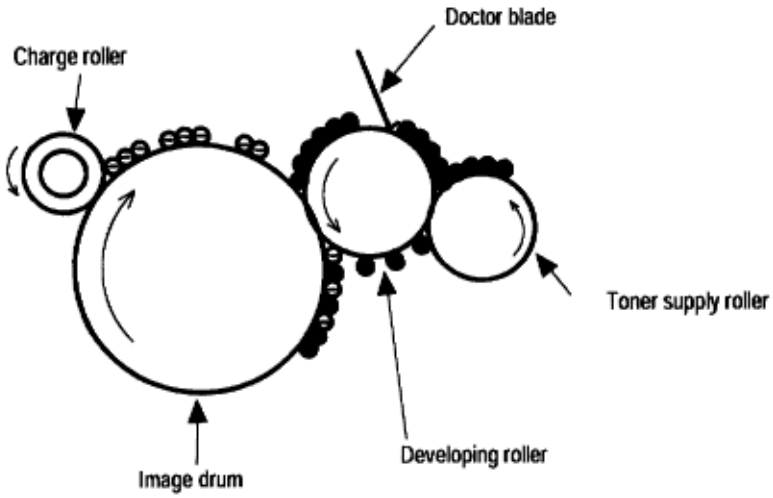
Light emitted from the LED head irradiates the image drum surface with negative charges. The surface potential of the irradiated part of the image drum drops, thereby forming an electrostatic latent image associated with the image signal.



(5) Developing

Toner is attracted to the electrostatic latent image on the image drum surface to convert it into a visible toner image. Developing takes place at the contact between the image drum and the developing roller.

1. 1 As the toner supply roller rotates while rubbing on the developing roller, a friction charge is generated between the developing roller and the toner, allowing the toner to be attracted to the developing roller. (The developing roller surface is charged positive and the toner, negative.)



2. The toner attracted to the developing roller is scraped off by the doctor blade, forming a thin coat of toner on the developing roller surface.

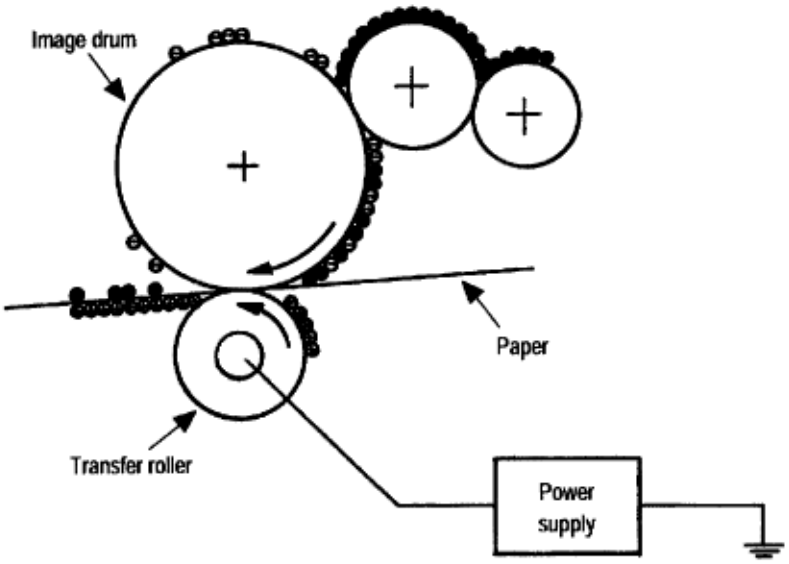
3. Toner is attracted to the exposed part (low-potential part) of the image drum at the contact between the image drum and the developing roller, making the electrostatic latent image visible.

(6) Transfer

The transfer roller is composed of conductive sponge material and is designed to make the image drum surface and the paper closely into contact.

Paper is placed over the image drum surface, and a positive charge, opposite in polarity to the toner, is applied to the paper from its reverse side.

The application of a high positive voltage from the power supply to the transfer roller causes the positive charge induced to the transfer roller surface to be transferred to the paper at the contact between the transfer roller and the paper. As a results, toner charged negative that is attracted to the image drum surface is transferred to the upper side of the paper by the positive charge on the lower side of the paper.

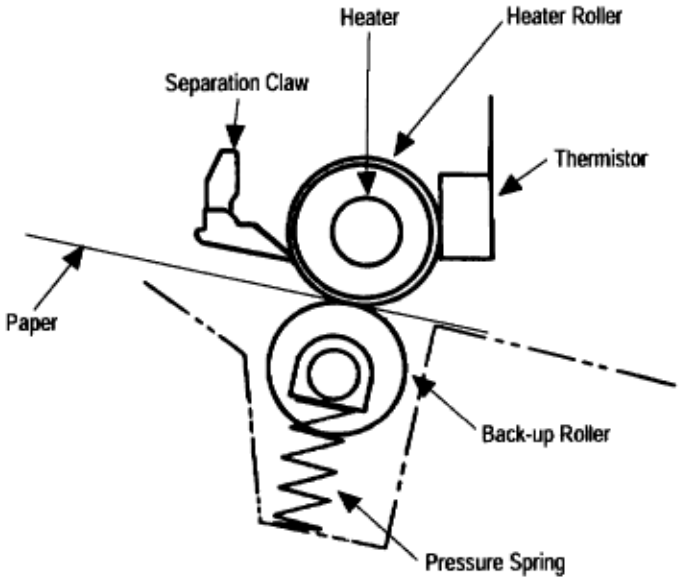


(7) Fusing

After the end of the transfer, the unfused toner image is fused on the paper under heat and pressure as it passes between the heater roller and the backup roller. The heater roller with a Teflon coating incorporates a 400W heater (Halogen lamp), which heats the heat roller.

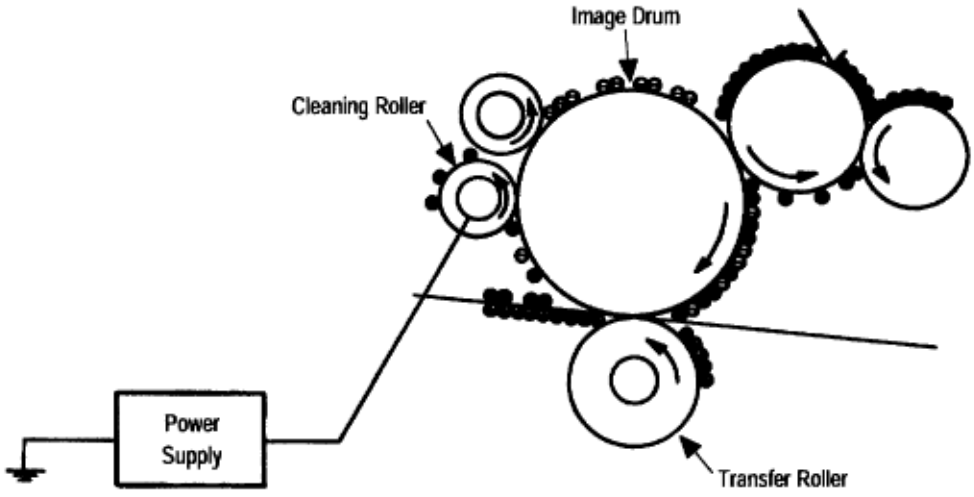
A thermistor which is in contact with the heater roller regulates the heater roller at a predetermined temperature (about 185 ~ 188°C). A safety thermostat cuts off voltage supply to the heater by opening the thermostat in the event of abnormal temperature rises.

The backup roller is held under a pressure of 2.5 kg from the pressure spring at each side.



(8) Cleaning

After the end of the transfer, residual toner on the image drum is attracted to the cleaning roller temporarily by static electricity to clean the image drum surface.



(9) Cleaning of rollers

The charge roller, transfer roller and cleaning roller are cleaned in the following cases:

- In warming up at power-on time
- In warming up after the cover is opened and closed

- When the number of accumulated sheets is 10 or more and the printout operation ends
  Changes in bias voltage applied to each roller move adhesive toner from the roller to the image drum and return it to the developer.

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2.5 Paper Jam Detection

The paper jam detection function supervises the paper state at power-on time and during printing. In the event that the following state occurs, this function interrupts the printing process. If any of the following errors is presented, recovery printing will be performed by removing the jammed paper (namely by opening the upper cover, removing the jammed paper and closing the upper cover).

Error	Cause of error
Paper input jam	- At power-on time, the paper is placed at the inlet sensor. - After hopping operation is attempted three times, the leading part of the paper does not reach the inlet sensor.
Paper feed jam	- At power-on time, the paper is placed at the paper sensor. - The leading part of the paper does not reach the paper sensor within a predetermined distance after the paper has reached the inlet sensor. - The trailing part of the paper does not pass over the paper sensor within a predetermined distance after the leading edge of the paper has passed over the paper sensor. - The leading part of paper does not reach the outlet sensor within a predetermined distance after the paper has reached the paper sensor.
Paper exit jam	- At power-on time, the paper is placed on the outlet sensor. - The paper does not pass over the outlet sensor within a predetermined time after the leading part of the paper has reached the outlet sensor. - The paper size check with the manual feed specified considers the reference size as free size.
Paper size error	- The size of the paper is supervised by the inlet sensors 1. It is detected that the paper does not pass over the inlet sensor 1 within predetermined range of distance. - The inlet sensor 2 detects that the size of the loaded paper is A4 or larger, or smaller than A4. The detected paper size differs from the paper size set by command or menu. - The paper size check with the manual feed specified considers the reference size as free size.

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2.6 Cover Open

When the stacker cover is opened, the cover open microswitch on the power supply board is turned off to cut the supply of +30V to the high voltage power supply circuit. As a result, all high-voltage outputs are interrupted. At the same time, the CVOPN signal is sent to the control board to notify it of the off state of the microswitch, and the control board performs the cover open processing.

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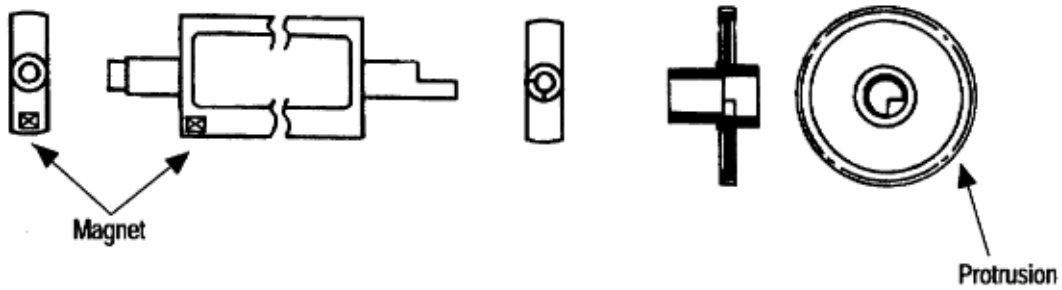
2.7 Toner Low Detection

- Composition
- The device consists of the stirring gear which rotates at a constant rate, the stirring bar and the magnet on the stirring bar. The stirring bar rotates through the link on the protrusion in the stirring gear.



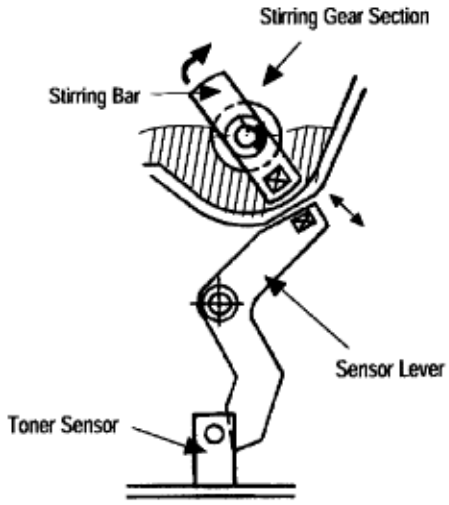
Stirring Bar Stirring Gear

- Operation

Toner Low is detected by monitoring the time interval of the encounter of the magnet set on the sensor lever and the magnet on the stirring bar.

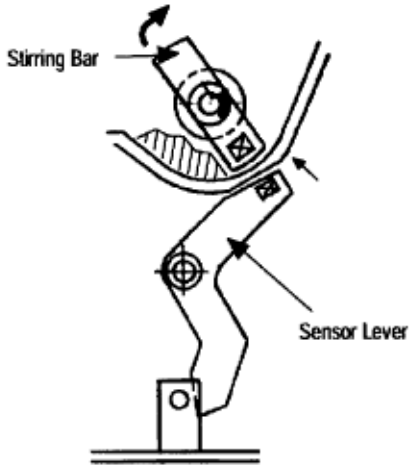
Operation during toner full state

- The stirring bar rotates due to the interlocking with the stirring gear.
- Even when the magnet on the stirring bar reaches the maximum height, since the other side is being dipped in the toner, the stirring bar is pushed by the stirring gear.

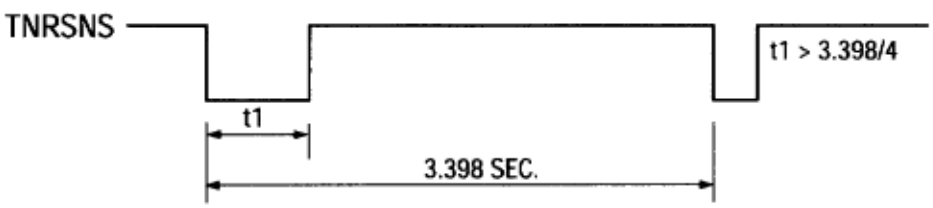


Operation during toner low state

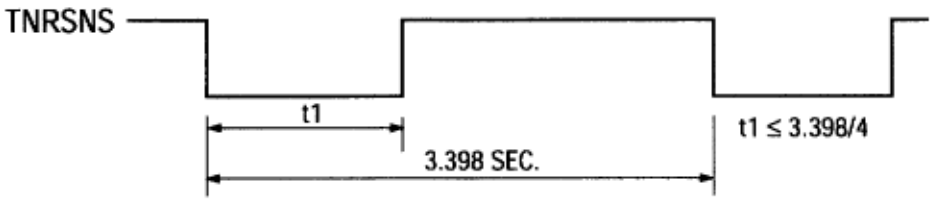
- When the stirring bar reaches the maximum height, since there is no resistance provided by the toner on the other side, it falls to the minimum height due to its own weight. Because of this, the time interval during which it encounters the magnet of the sensor lever becomes long. By monitoring this time interval, toner low can be detected.



TONER FULL state



TONER LOW state



- When the toner low state is detected 2 times consecutively, Toner Low is established.
- When the toner full state is detected 2 times consecutively, Toner Low is canceled.
- When there is no change with the toner sensor for 2 cycles (3.398 sec. x 2) or more, then the Toner Sensor Alarm is activated.
- The toner sensor is not monitored while the drum motor is stopped.

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2.8 Stacker-full Detection

The sensor (interlocked with the lever) at the paper outlet to the stacker detects a stacker-full state (about 250 sheets) and stops printing of the ensuing pages.

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2.9 Page Size Detection

The four tab pieces are driven according to the setting position of the paper guide through the cam interlocked with the paper guide of the paper cassette.

When the paper cassette is inserted into the printer, the state of the tab pieces is detected by the microswitch to recognize the paper size.

STATE OF MICROSWITCHES

SW1	SW2	SW3	SW4	Paper size
0	1	1	1	Letter
0	1	0	1	Executive
0	0	1	1	A4
1	1	1	0	Legal 14
1	0	1	1	Legal 13
1	1	0	1	B5
1	1	0	0	A5
1	0	0	1	A6

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2.10 PostScript Board (BOARD-PSBA) Optional

The PostScript board consists of program/font ROM's, an EEPROM, and a LocalTalk interface control circuit.

(1) Program/font ROM's

The program/font ROM's store the PostScript Level II program and its fonts.
MASK ROM is used as the program/font ROM's.

(2) EEPROM

The EEPROM has a 4-kbit capacity and stores the PostScript's menu settings.

(3) LocalTalk interface control circuit

AppleTalk protocol data is received from the host system via LocalTalk interface.
The LocalTalk interface control circuit consists of a CPU, a program ROM, a SRAM, and a driver/receiver IC.

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3. PARTS REPLACEMENT

The section explains the procedures for replacement of parts, assemblies, and units in the field. Only the removal procedures are explained here. Reverse the procedure for the installation.

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3.1 Precautions for Parts Replacement

(1) Before starting parts replacement, remove the AC cable and interface cable.

(a) Remove the AC cable in the following procedure:

i) Turn off ("o") the power switch of the printer

ii) Disconnect the AC inlet plug of the AC cable from the AC receptacle.

iii) Disconnect the AC cable and interface cable from the printer.

(b) Reconnect the printer in the following procedure.

i) Connect the AC cable and interface cable to the printer.

ii) Connect the AC inlet plug to the AC receptacle.

iii) Turn on ("I") the power switch of the printer.

##

(2) Do not try disassembly as long as the printer is operating normally.

(3) Do not remove unnecessary parts: try to keep disassembly to a minimum.

(4) Use specified service tools.

(5) When disassembling, follow the determined sequence. Otherwise, parts may be damaged.

(6) Since screws, collars and other small parts are likely to be lost, they should temporarily be attached to the orginal positions.

(7) When handling ICs such as microprocessors, ROM and RAM, and circuit boards, do not wear gloves that are likely to generate static electricity.

(8) Do not place printed circuit boards directly on the equipment or floor.

[Service Tools]

Table 3-1 shows the tools required for field replacement of printed circuit boards and units.

Table 3-1 Service Tools

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3.2 Parts Layout

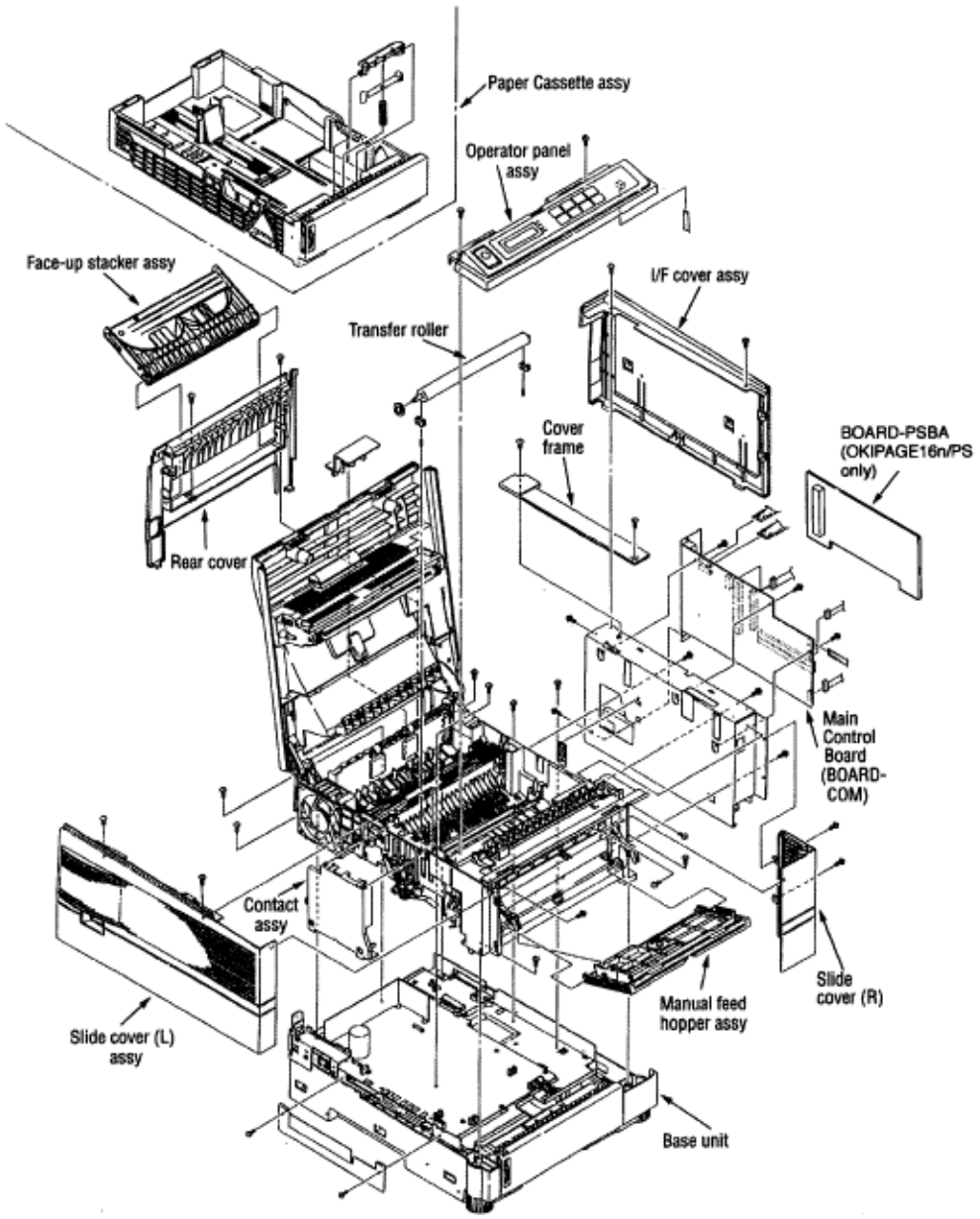

Figure 3-1

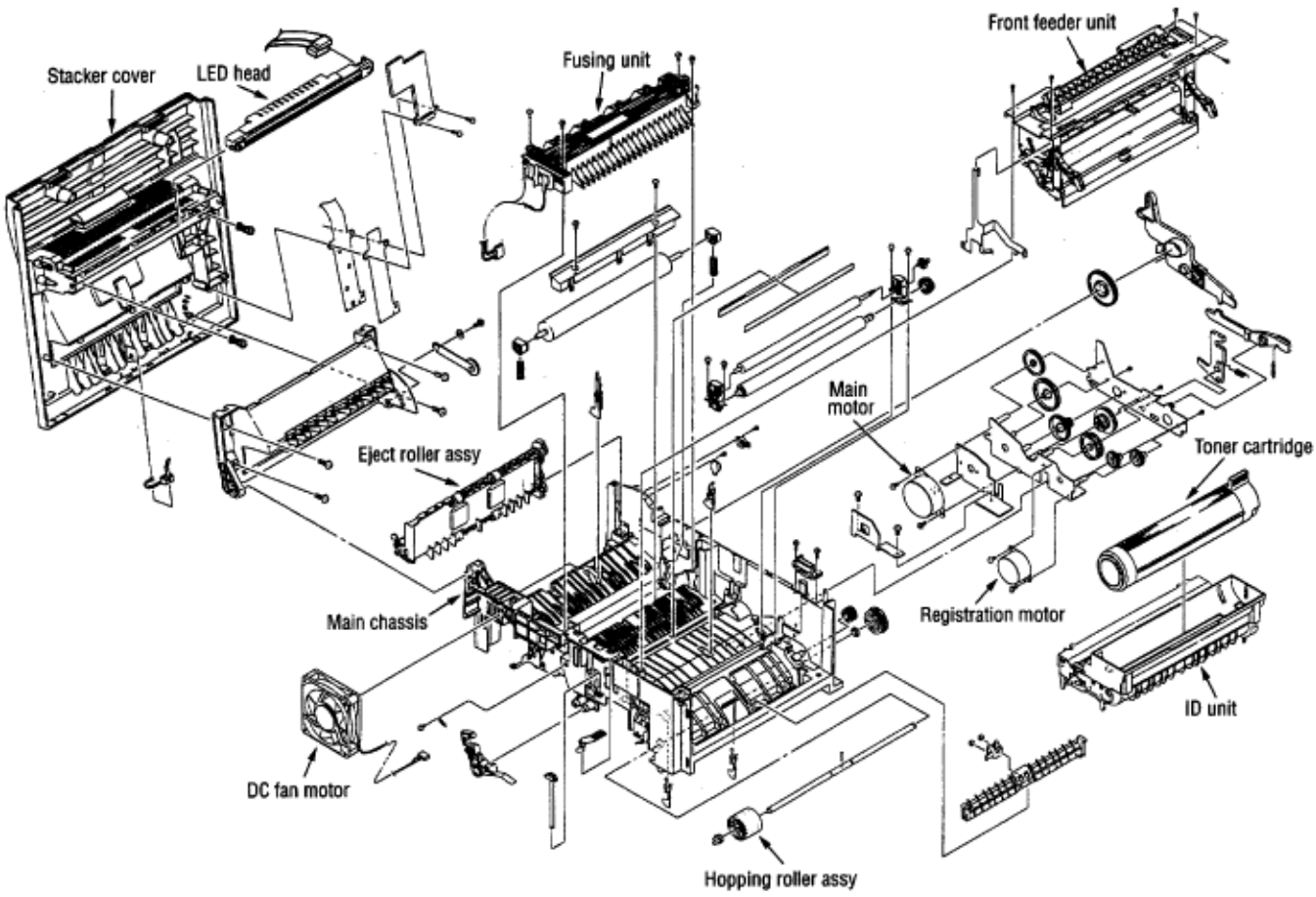
Stacker cover
LED head
Fusing unit
Front feeder unit
Main motor
Eject roller assy
Toner cartridge
Main chassis
Registration motor
ID unit
DC fan motor
Hopping roller assy

Figure 3-2

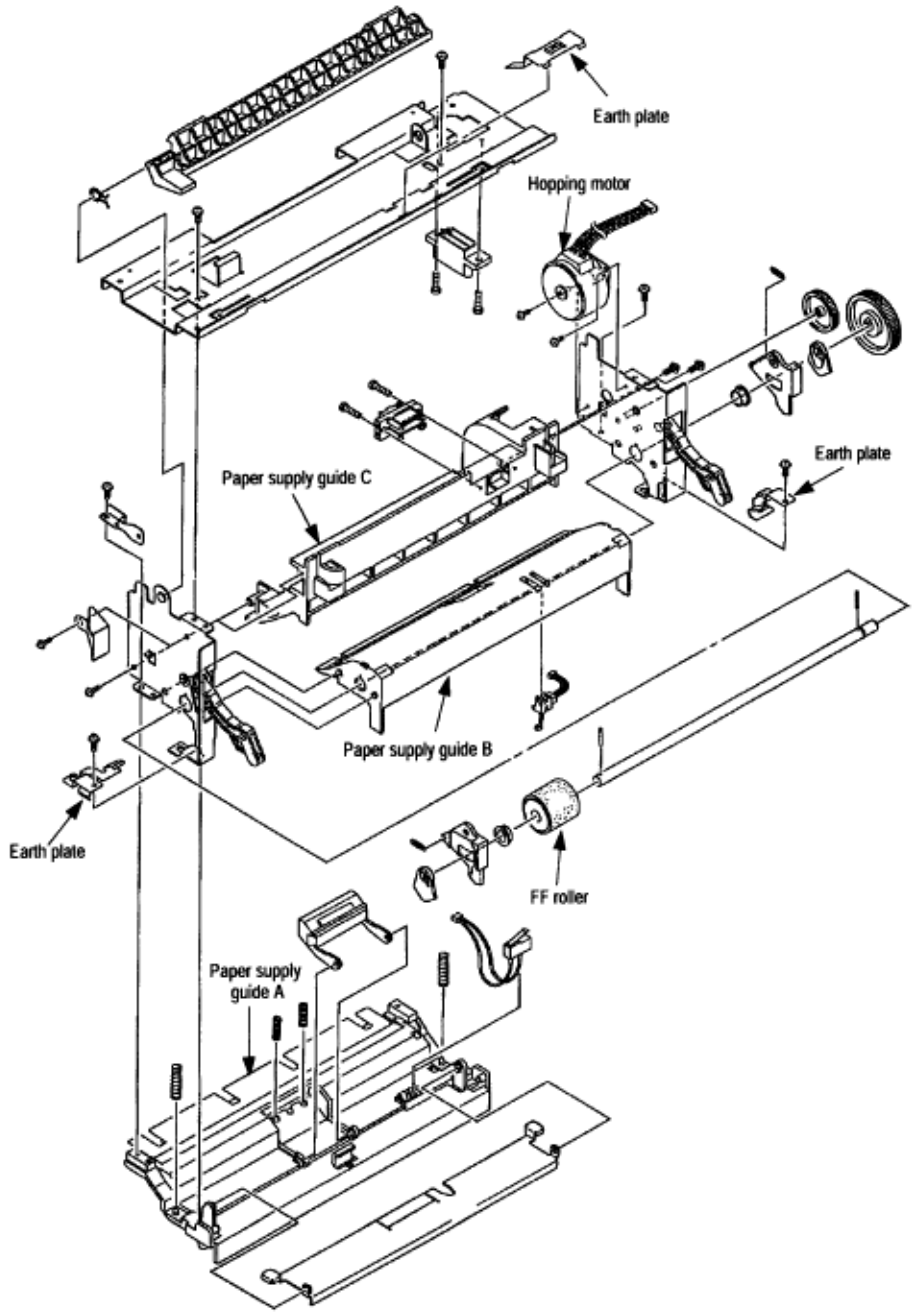
Earth plate
Hopping motor
Earth plate
Paper supply guide C
Paper supply guide B
Earth plate
FF roller
Paper supply guide A

Figure 3-3

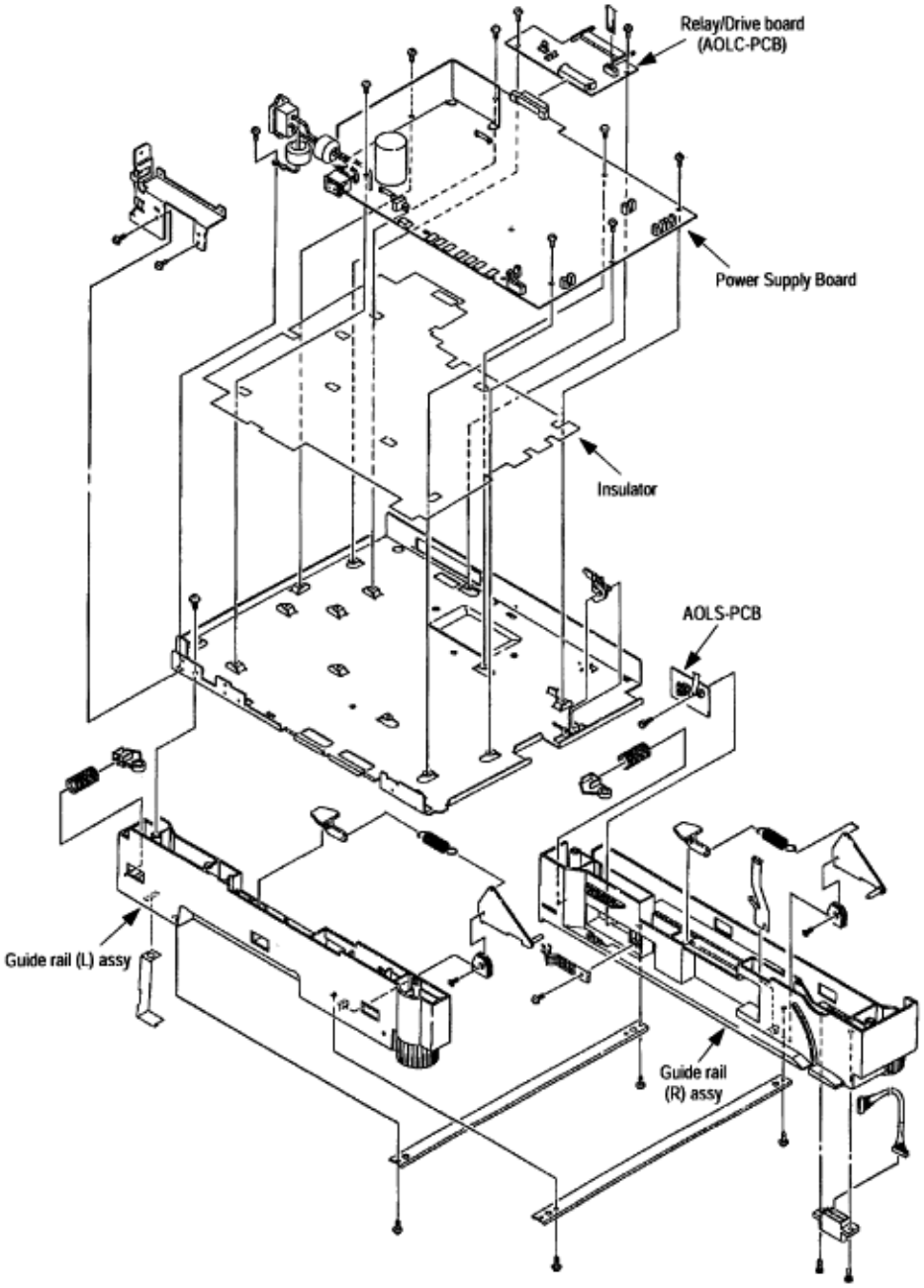

Figure 3-4

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3.3 How to Change Parts

This section explains how to change parts and assemblies appearing in the disassembly diagram below.

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3.3.1 Rear cover, side cover (L) Assembly, face-up stacker Assembly, and I/F cover Assembly.

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

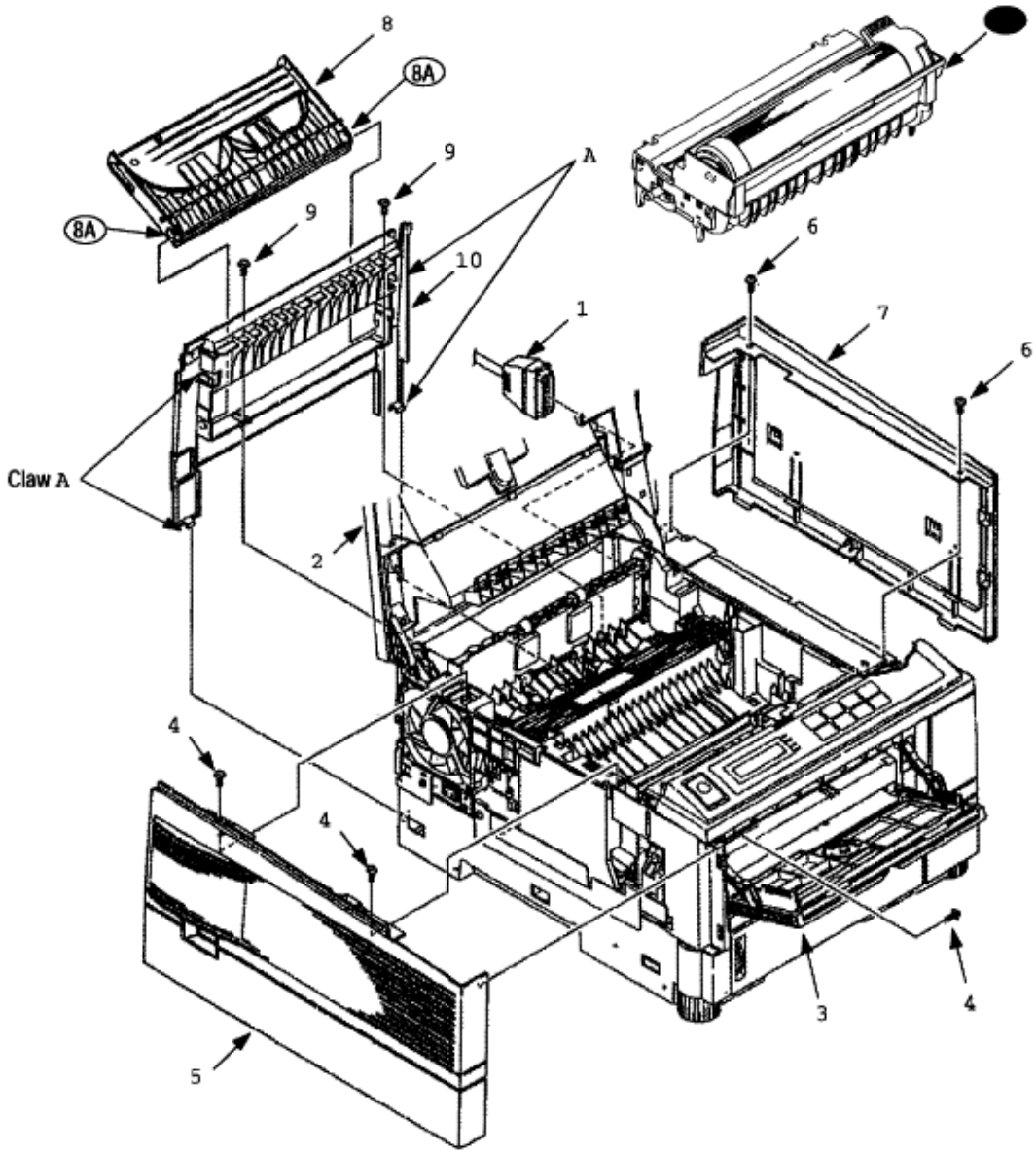
(2) Remove the interface cable 1. Remove drum/toner Assembly (see picture below) and store in black plastic bag shipped w/printer.

(3) Open the face-up stacker Assembly 8. Disconnect the engagement at the left and right protrusions 8A . Remove the face-up stacker Assembly 8. (Flex the Assembly 8 in the middle to disengage 8A from the Rear cover 0.)

(4) Open the stacker cover 2 and the manual feed hopper Assembly3. Remove three screws 4. Remove the side cover (L) Assembly 5.

(5) Remove two screws 6. Remove the I/F cover Assembly 7.

(6) Remove two screws 9 and four claws A. (Use a small flat blade screw driver to "pop" claws.) Remove the rear cover 10.



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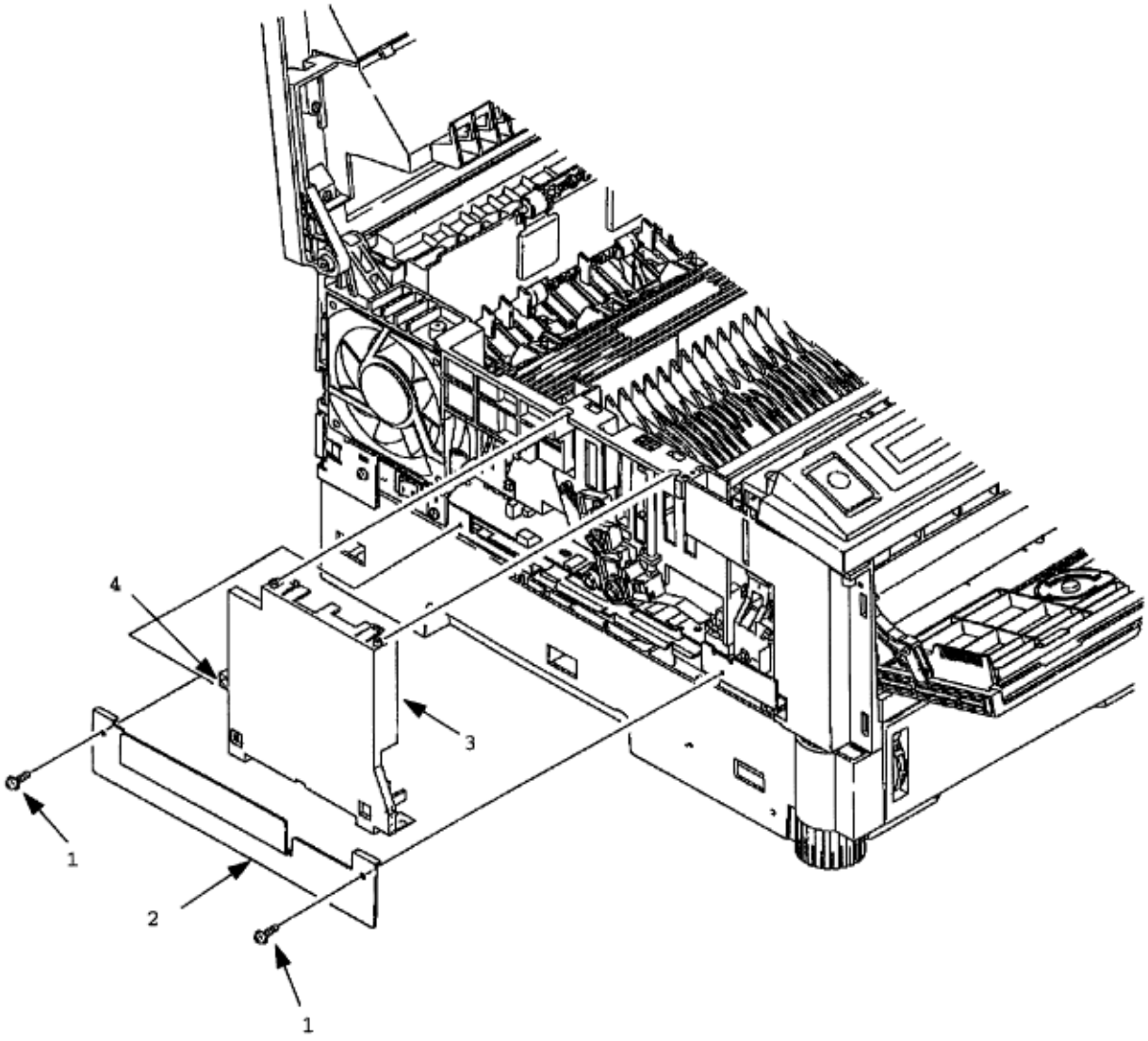
3.3.2 Contact Assembly

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the side cover (L) Assembly **(see 3.3.1 (1) to (4)).**

(3) Remove two screws 1. Remove the contact plate (cover) 2 and the contact Assembly 3. Pull bottom of Assembly 3 out first, then the top of Assembly. Remove fan connector cables from location 4.

Caution: Be careful not to deform the electrodes of the contact Assembly when removing the contact Assembly.



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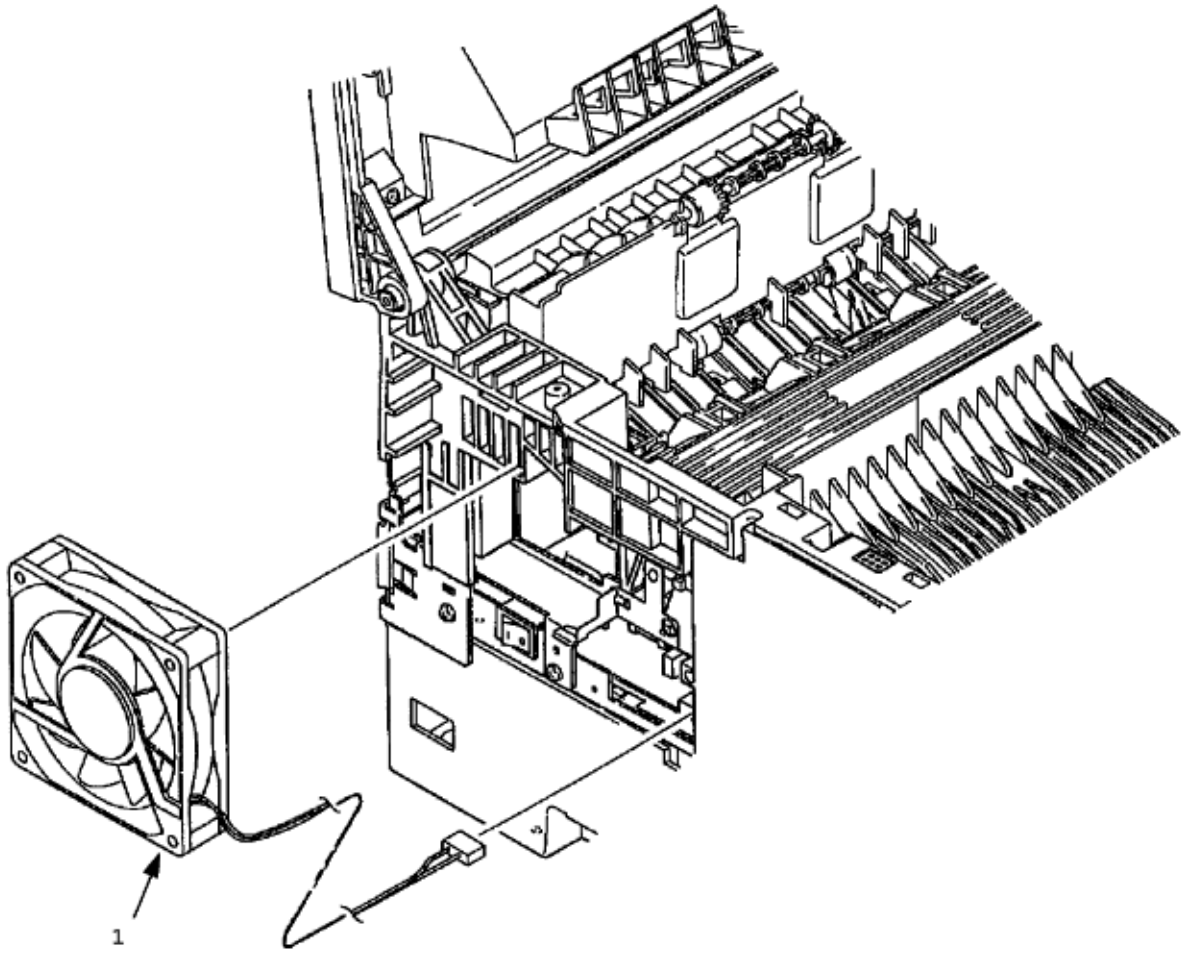
3.3.3 DC fan motor

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the side cover (L) Assembly **(see 3.3.1 (1) to (4)).**

(3) Unplug the connector of the DC fan motor 1 and remove the DC fan motor 1.



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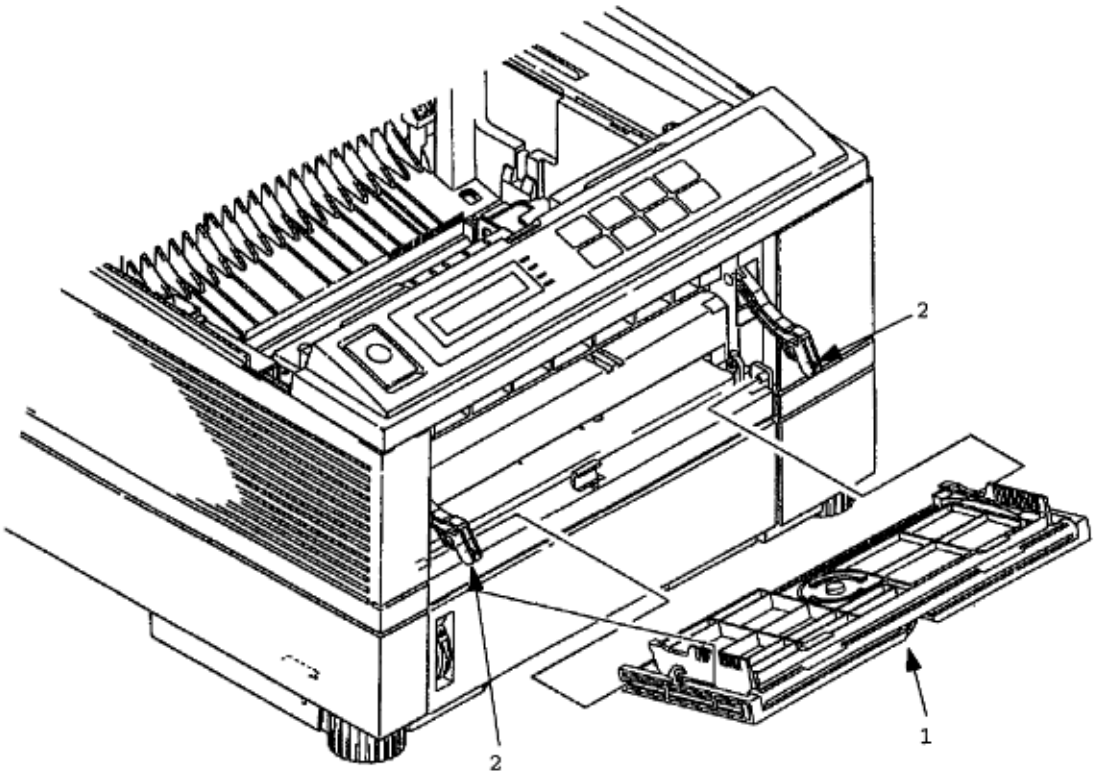
3.3.4 Manual feed hopper Assembly

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Open manual feed hopper Assembly 1. Disengage the lower portion of this Assembly.

(3) Hold manual feed hopper Assembly 1 vertically and remove the left and right levers 2 with a downward motion.



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3.3.5 Side cover (R) (operator panel Assembly)

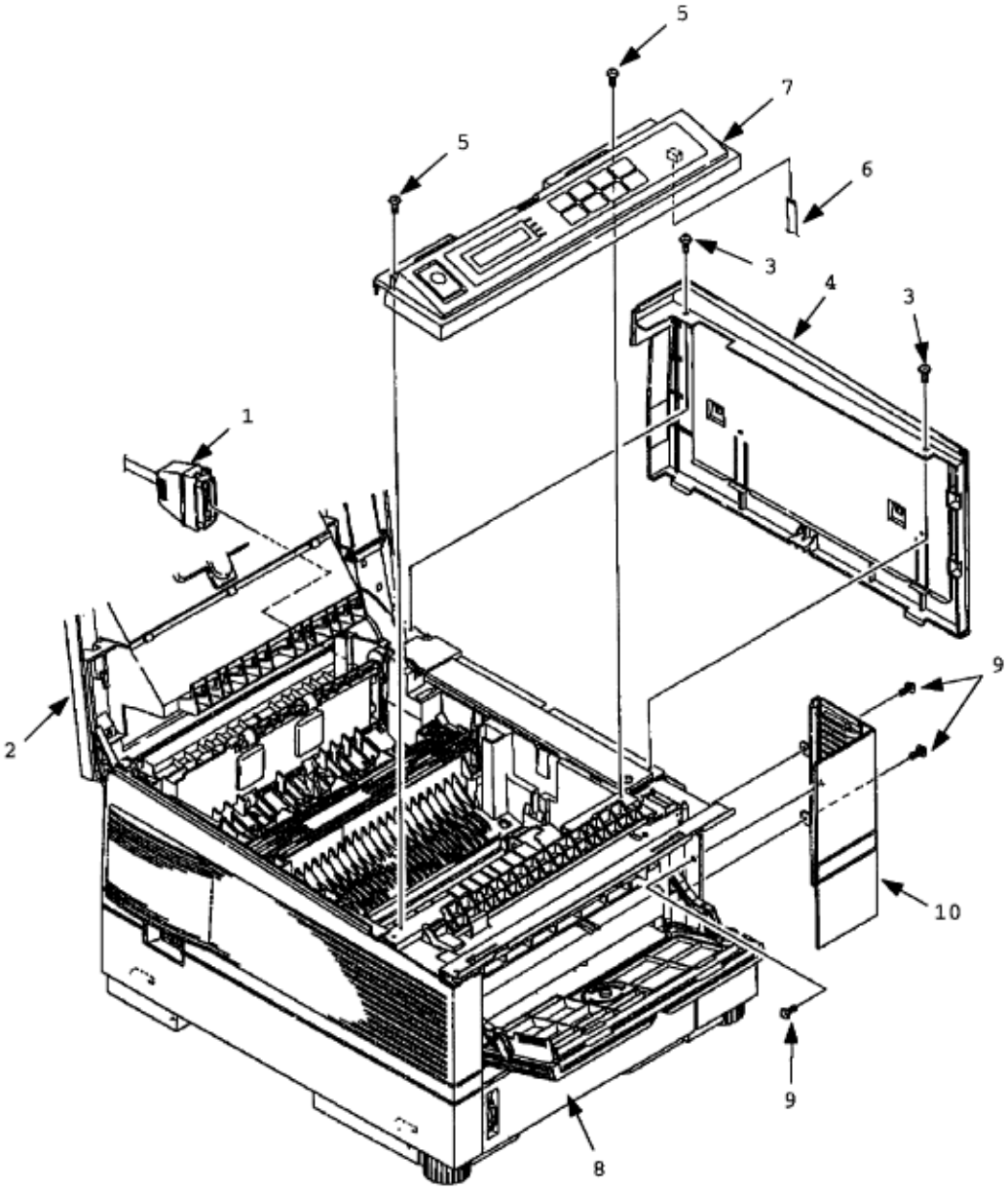
(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove interface cable 1.

(3) Open stacker cover 2. Remove two screws 3. Remove I/F cover Assembly 4.

(4) Remove two screws 5 and flexible cable 6 (use care to not damage flexible cable). Remove operator panel Assembly 7.

(5) Open manual feed hopper Assembly 8. Remove three screws 9 and then remove side cover (R) 10.



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3.3.6 Earth plate BK (R) (BOARD-PSBA, BOARD-COM)

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove side cover (R) **(see 3.3.5).**

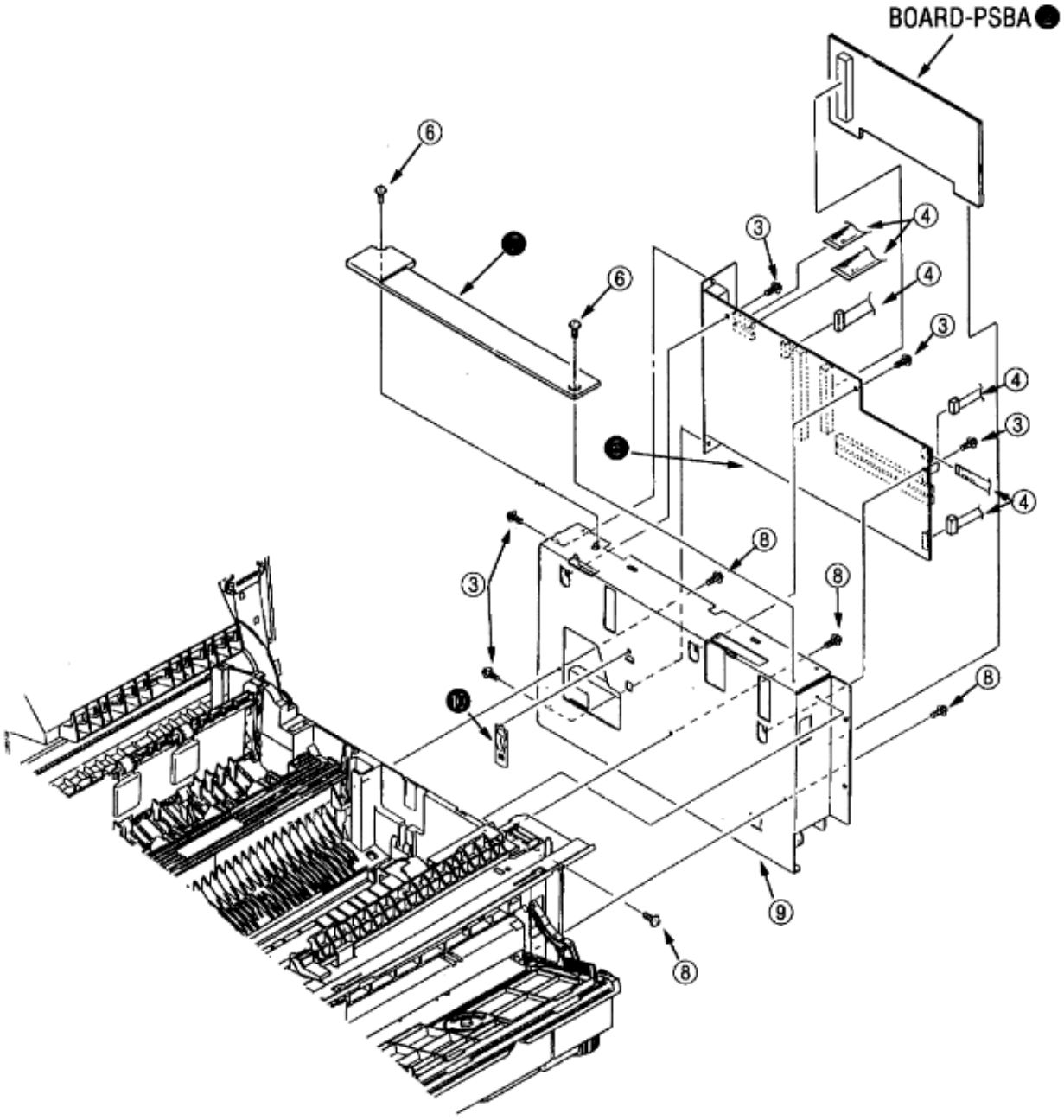
(3) Remove a screw 1. Remove BOARD-PSBA 2. (OKIPAGE16n/PS only)

(4) Remove five screws 3 and seven connectors 4. Remove BOARD-COM 5.

(5) Remove two screws 6 Remove IC card cover 7.

(6) Remove four screws 8. Remove side plate (R) 9, by pulling up and out on top part of plate.

(7) Remove the claws and then remove Earth plate BK (R) 10.



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3.3.7 Stacker cover Assembly, damper arm, and washer

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

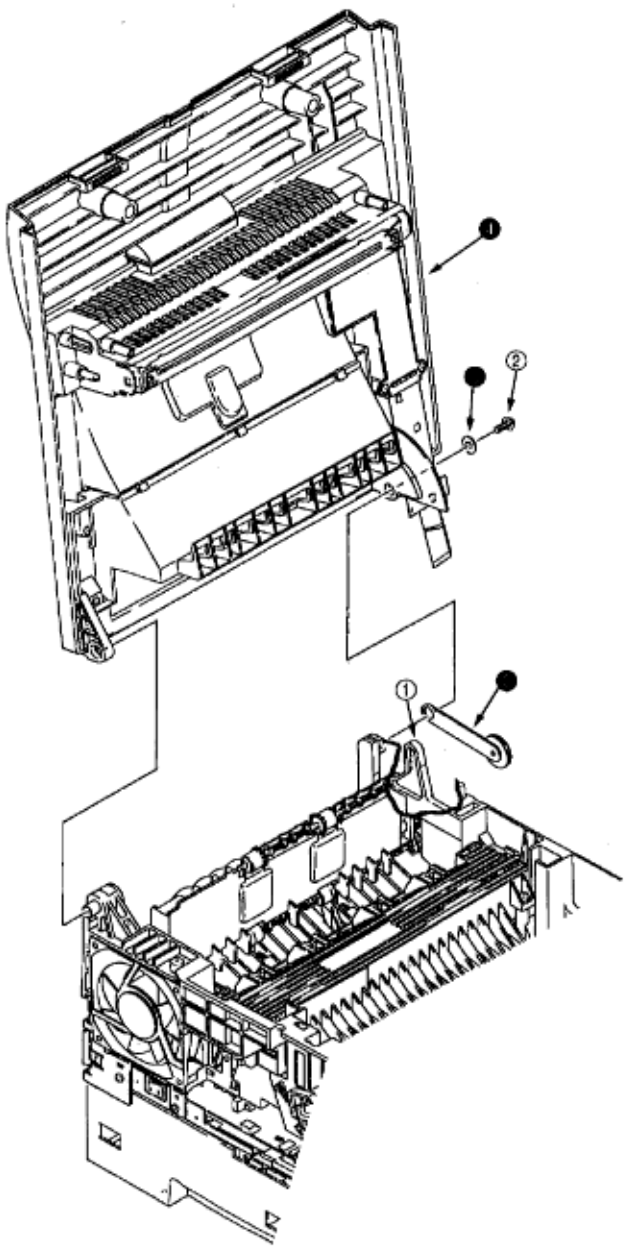
(2) Remove the rear cover **(see 3.3.1).**

(3) Remove the side cover (R) **(see 3.3.5).**

(4) Remove the side plate (R) **(see 3.3.6 (1) to (6)).**

(5) Disconnect the engagement of backup release lever 1 with the protrusion on the light side surface on the right side of the stacker cover.

(6) Remove screw 2 and washer 3. Remove two claws. Remove stacker cover Assembly 4 (at this time, the damper arm 5 is also removed).



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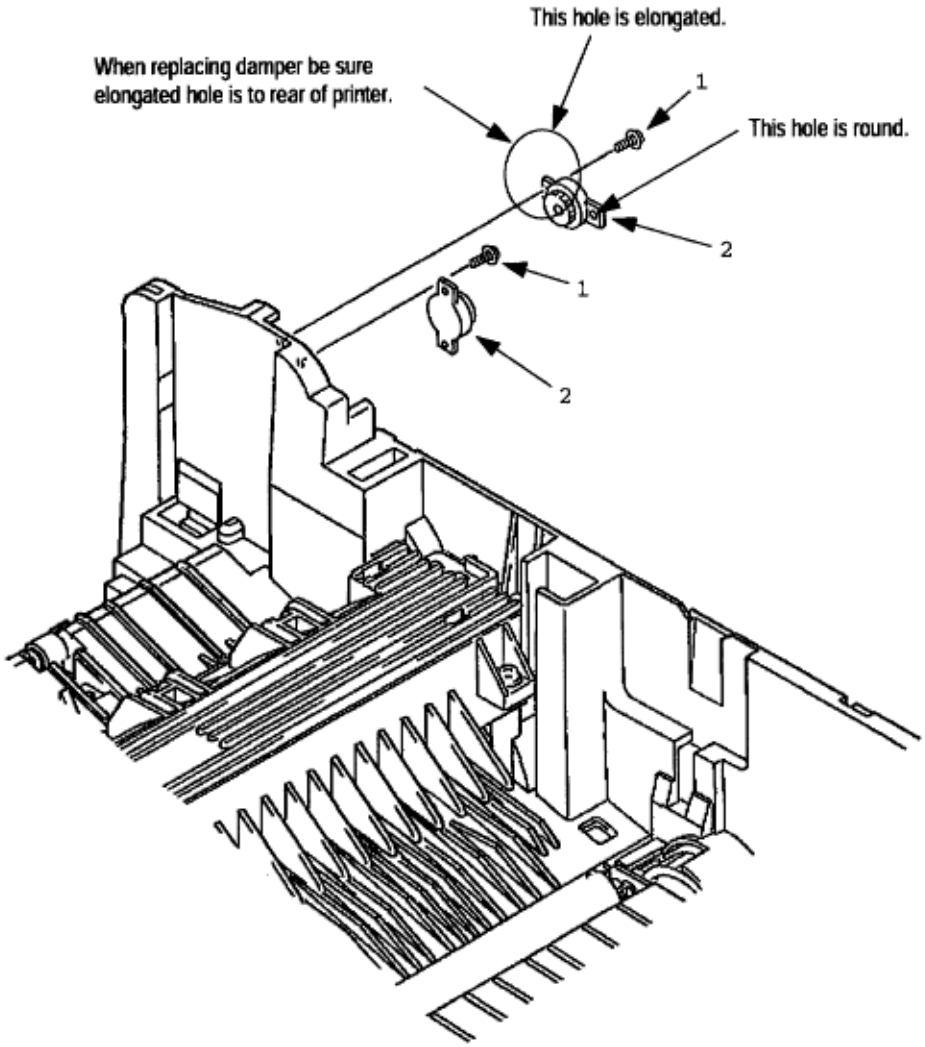
3.3.8 Damper

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the damper arm (see 3.3.7).

(3) Remove two screws 1 and then remove two dampers 2.



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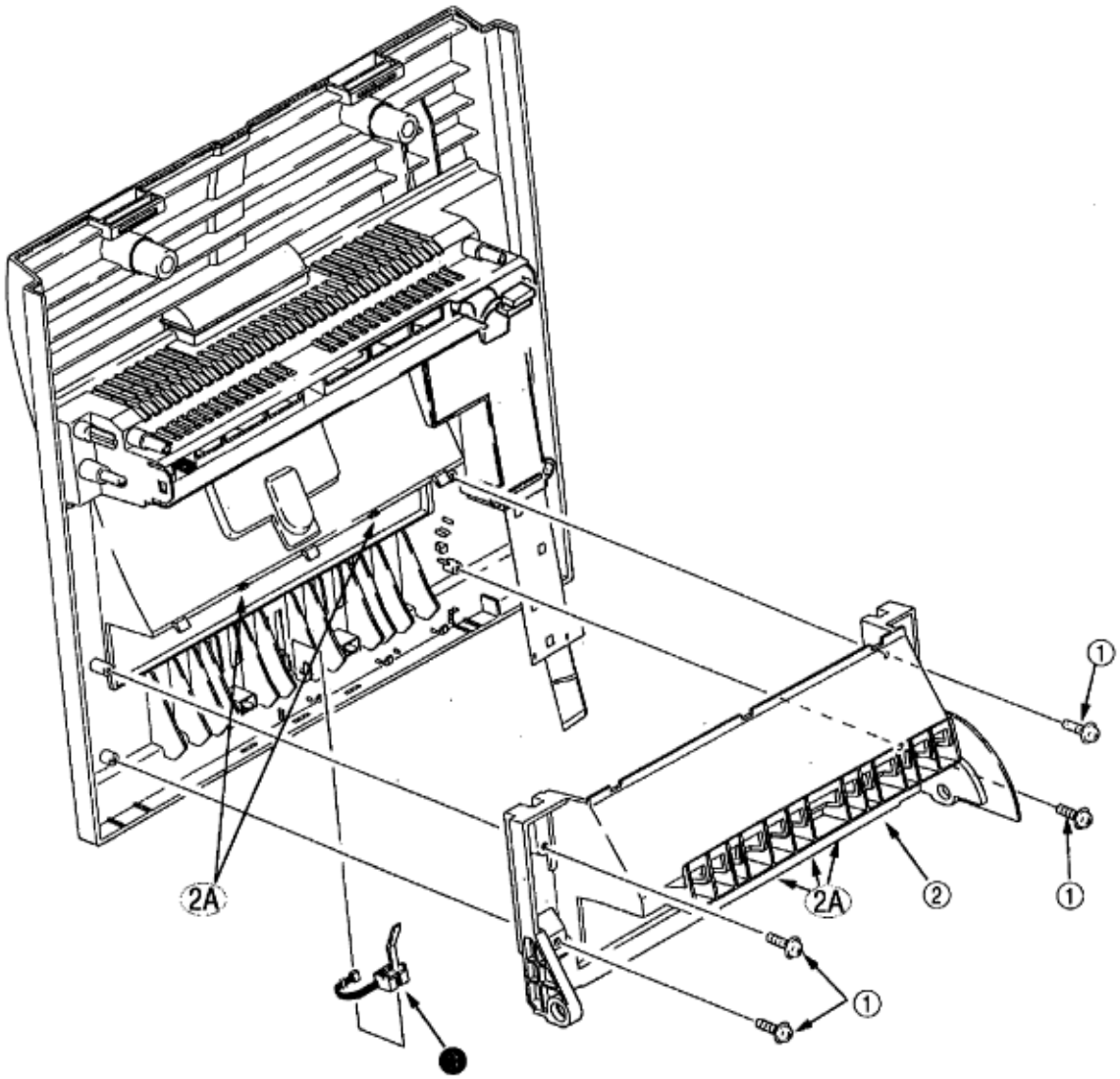
3.3.9 Stacker full sensor Assembly

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the stacker cover Assembly **(see 3.3.7).**

(3) Remove four screw 1. Remove stacker mount 2 by releasing the tabs at position 2A .

(4) Remove stacker full sensor Assembly 3 by releasing spreading the plastic tabs on each side of sensor Assembly 3 and lifting switch from cover.



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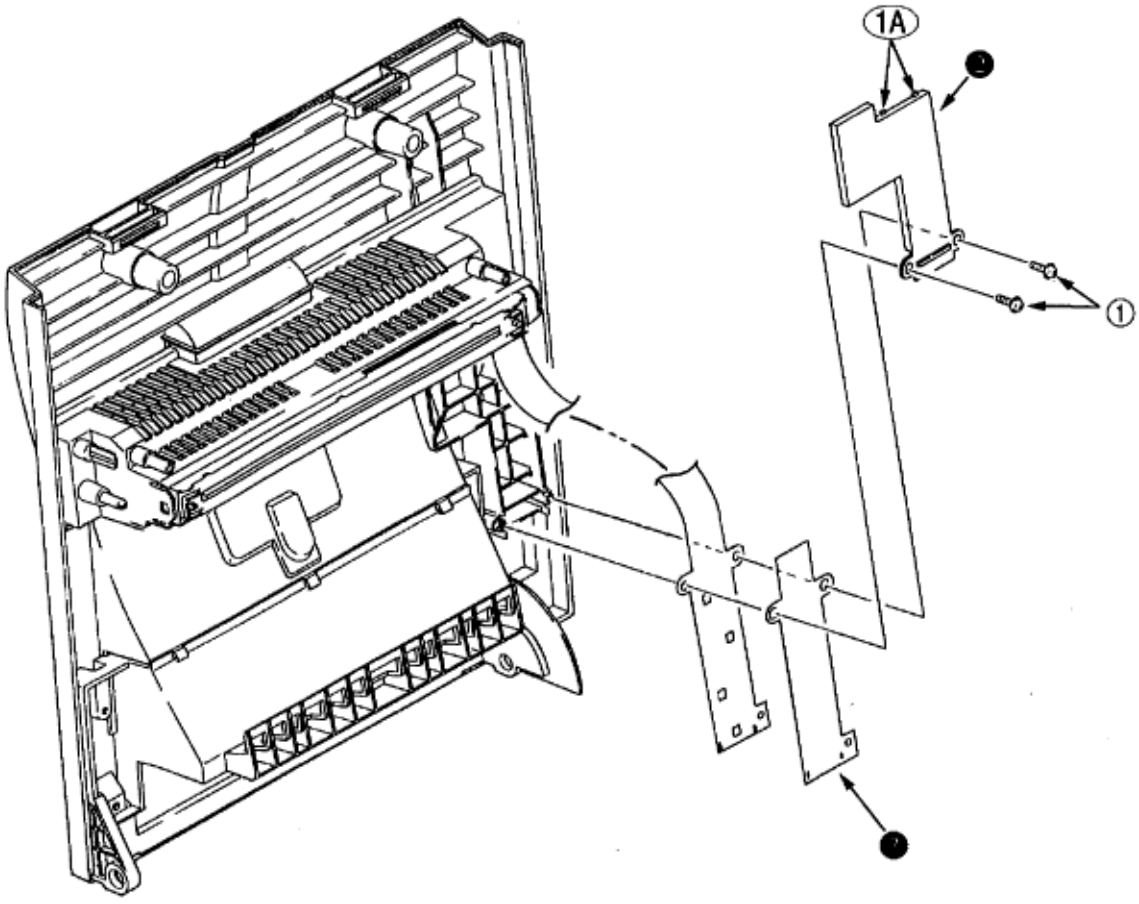
3.3.10 Cable cover (cable guides A and B)

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the stacker cover Assembly (see 3.3.7).

(3) Remove two screws 1 release tabs at position 1A . Remove cable cover 2, cable guide A 3.



Note: Use care when replacing cable cover. Do not pinch, crimp, or cut cables or protective sheet.

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3.3.11 Eject roller Assembly

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

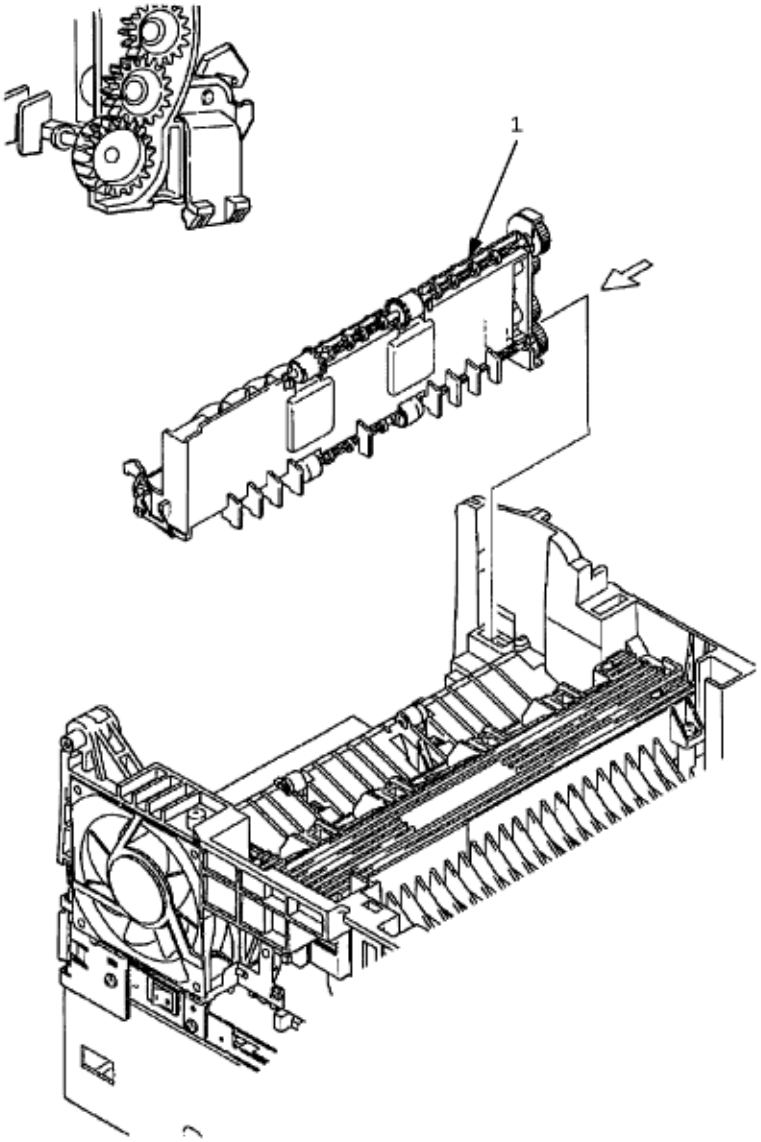
(2) Remove the rear cover **(see 3.3.1).**

(3) Remove the side cover (R) **(see 3.3.5).**

(4) Remove the side plate (R) **(see 3.3.6 (1) to (6)).**

(5) Remove the stacker cover Assembly **(see 3.3.7)**.

(6) Release the latch on the right side of eject roller Assembly 1. Lift up and remove the eject roller Assembly.



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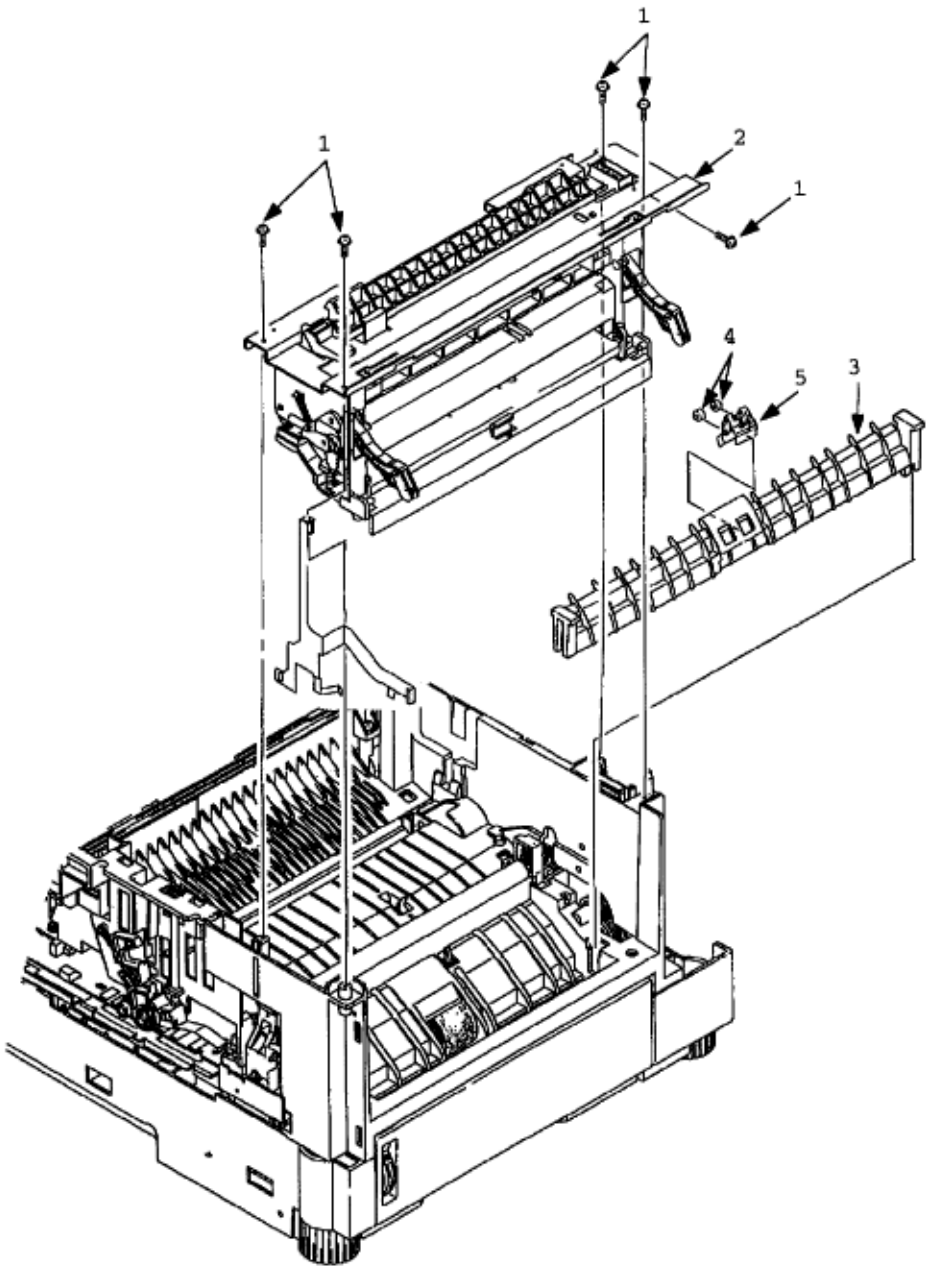
3.3.12 Paper supply guide D

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the side cover (R) **(see 3.3.5).**

(3) Remove five screws 1. Lift up and remove front feeder roller Assembly 2.

(4) Lift up and remove paper supply guide D 3. (At this time, two bias rollers 4 and bias spring 5 are also removed. Be careful not to lose them.)



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3.3.13 Separator F

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the manual feed hopper Assembly **(see 3.3.4).**

(3) Remove the side cover (R) **(see 3.3.5).**

(4) Remove the front feeder Assembly **(see 3.3.12 steps (1) to (3)) .** Make a diagram of wire locations and routing.

(5) Remove two screws 1 and then remove the inner cover 2. At this time, the cover lock lever 3 and the torsion spring 4 are also removed, note position of torsion spring.

(6) Remove two screws 5 and then remove square-shaped connector 6.

(7) Using a dedicated tool, remove the connector of switch Assembly 7 from square-shaped connector 6.

(8) Turn idle gear 8 in the direction of arrow A until front feeder plate 9 is elevated.

(9) Remove front feeder gear = and then remove two springs (F) A. Be careful not to lose the springs.

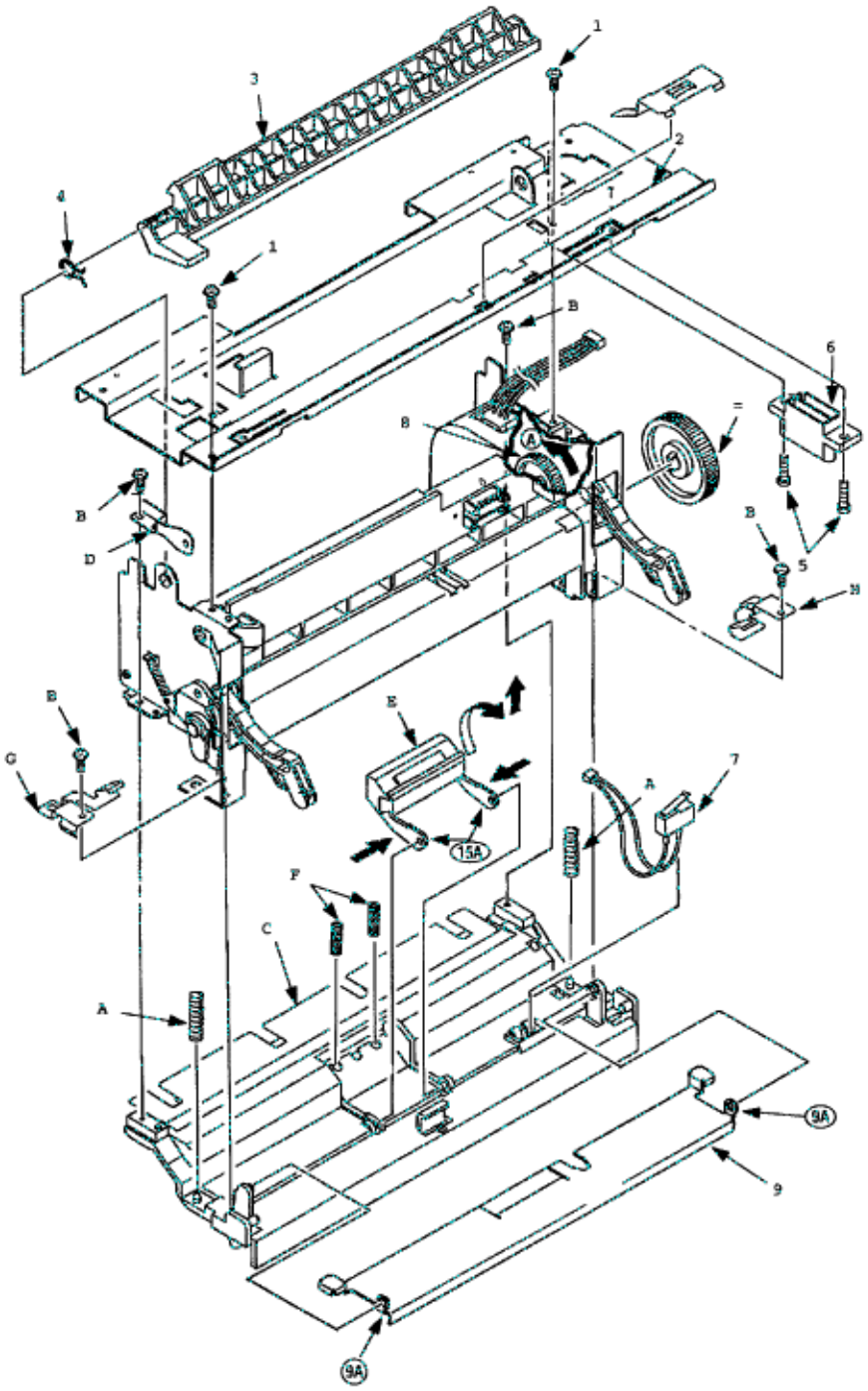
(10) Remove four screws B and then remove paper supply guide A C. (At this time, front feeder earth plate D G H are also removed.)

(11) Remove front feeder plate 9 by releasing the engagement at two parts 9A .
Switch Assembly 7 may now be removed.

(12) Pull up separator E toward you and then release two mounting posts at 15A to remove the separator. (At this time, two springs F are also removed simultaneously. Be careful not to lose the springs.)

(13) Release two clutches on paper supply guide C and pull out switch Assembly 7 upward.
Switch Assembly 7 should be moved more towards the center of the paper path.

During Re-assembly use great care: do not pinch, crimp, or cut wires to switch Assembly 7.



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3.3.14 Front feeder roller Assy

(1) Turn the AC power supply switch off. Unplug the AC power cord from the outlet.

(2) Remove the manual feed hopper Assy **(see 3.3.4 .)**.

(3) Remove the side cover (R) **(see 3.3.5).**

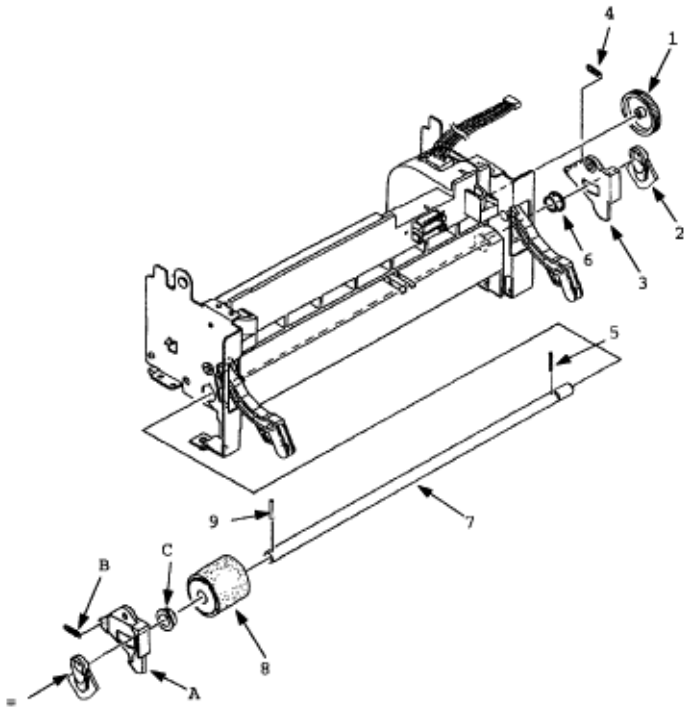
(4) Remove the front feeder roller Assy **(see 3.3.12 (1) to (3) .**

(5) Remove the paper supply guide A **(see 3.3.13 (1) to (10)) .**

(6) Remove idle gear 1 and then remove the right side front feeder cam 2, release lever (R) 3, and spring 4. (At this time, knock pin 5 and bearing F 6 are also removed. Be careful not to lose them.) Do not mix these parts with those from the left side of Assy.

(7) Pull out the front feeder shaft 7 toward the left and then remove front feeder roller Assy 8.

(8) Remove knock pin 9 and then remove front feeder cam = on the left (L) side, release lever (L) A, and spring B. (At this time, the bearing F C on the left (L) side is also removed.) Do not mix these parts with those from the right side of Assy.



Note:
1: Hopping roller orientation when removed from shaft.

2: Be sure sensor arm swings freely after re-assembly.

3: Be sure that during re-assembly both feeder cams (2 and =) are facing the same direction.

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3.3.15 Hopping motor

(1) Turn the AC power switch off. Unplug the AC power cable from the outlet.

(2) Remove the manual feed hopper Assembly **(see 3.3.4).**

(3) Remove the side cover (R) **(see 3.3.5).**

(4) Remove the front feeder Assembly **(see 3.3.12.(1) to (3)).**

(5) Remove the inner cover and square-shaped connector **(see 3.3.13.(5) and (6)).**

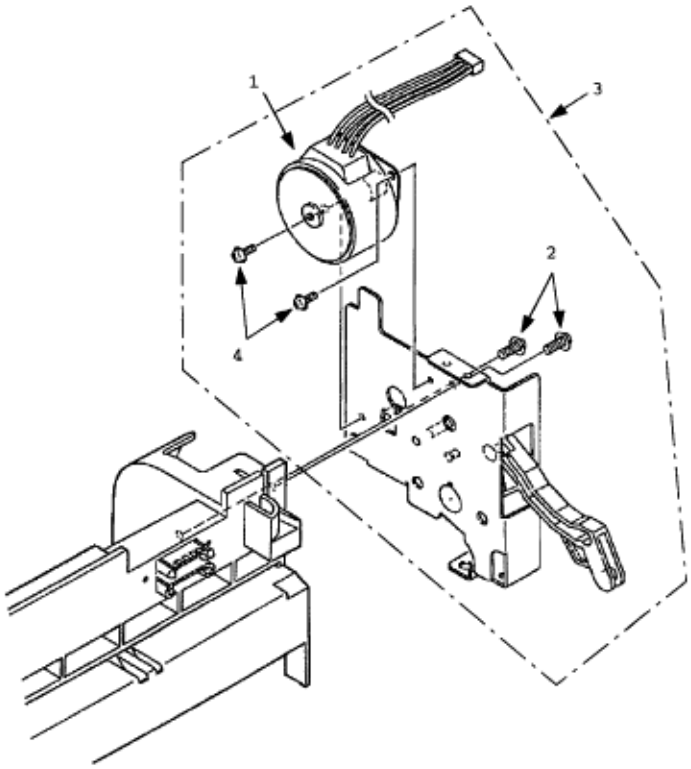
(6) Using a dedicated tool, remove the connector of hopping motor 1 from the square-shaped connector.

(7) Remove the paper supply guide A **(see 3.3.13. (7) to (10)).**

(8) Remove the lever (R) **(see 3.3.10. (6)).**

(9) Remove two screws 2 and then remove side plate (R) Assembly 3.

(10) Remove two screws 4 and then remove hopping motor 1.



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3.3.16 Front feeder paper end sensor

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the manual feed hopper Assembly **(see 3.3.4).**

(3) Remove the side cover (R) **(see 3.3.5).**

(4) Remove the front feeder roller Assembly **(see 3.3.12. (1) to (3)).**

(5) Remove the side plate (R) Assembly **(see 3.3.15. (1) to (9)).**

(6) Using a dedicated tool, remove the connector of front feeder paper end sensor 1 from the square-shaped connector.

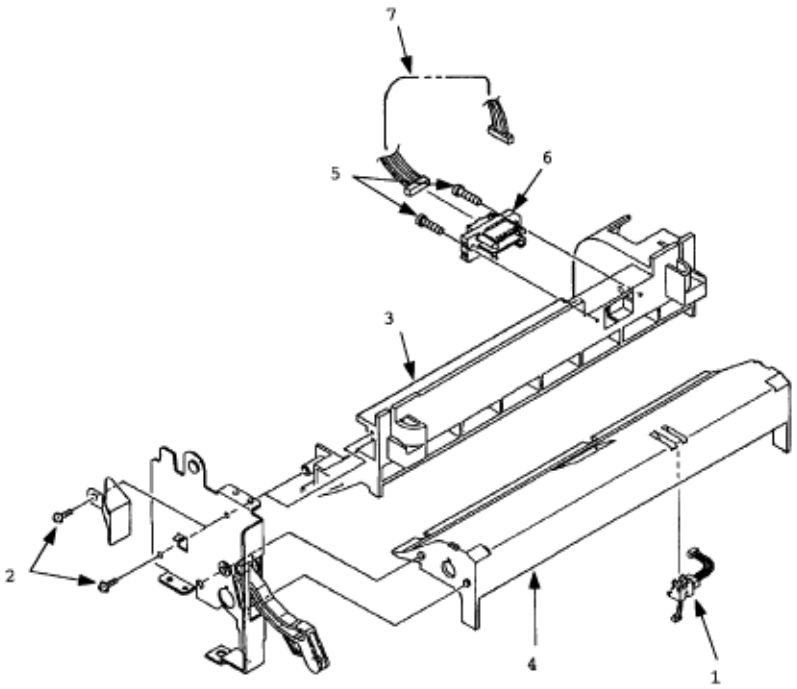
(7) Remove two screws 2 and then remove paper supply guide C 3.

(8) Remove paper supply guide B 4.

(9) Remove four claws and then remove front feeder paper end sensor 1.

(10) Remove two screws 5 and then remove square-shaped connector 6 from paper supply guide C 3.

(11) Using a dedicated tool, remove the connector cord 7 from the square-shaped connector.



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3.3.17 Main chassis unit

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the rear cover **(see 3.3.1).**

(3) Remove the contact Assembly **(see 3.3.2).**

(4) Remove the side cover (R) **(see 3.3.5).**

(5) Remove the side plate (R) **(see 3.3.6 (1) to (6)).**

(6) Remove the stacker cover Assembly **(see 3.3.7).**

(7) Remove the front feeder roller Assembly **(see 3.3.12, (1) to (3)).**
At this time, it is not required to remove the manual feed hopper Assembly.

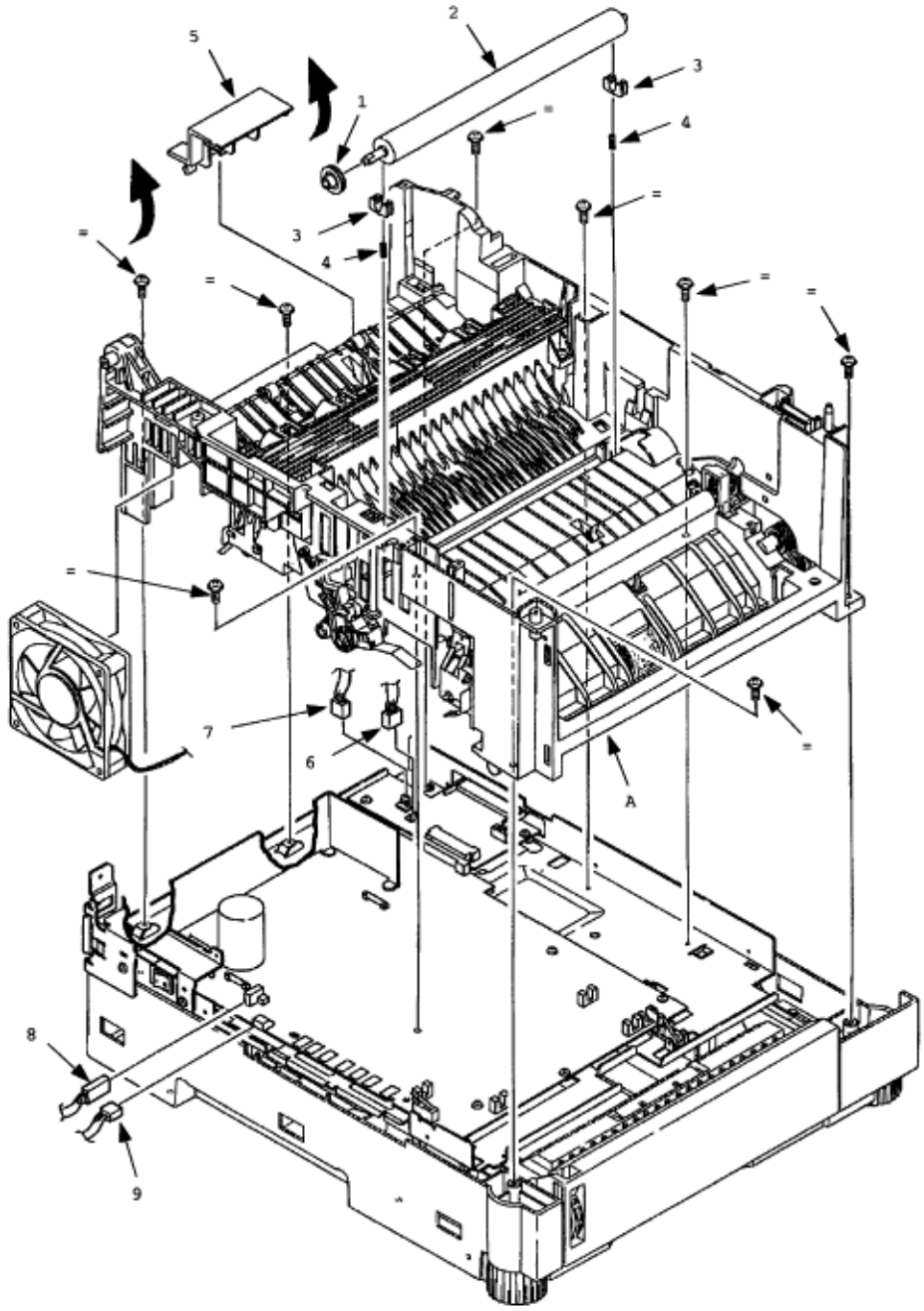
(8) Remove the earth plate (HP).

(9) Lift gear (TR) 1 to unlock it. Remove gear (TR) 1 and transfer roller 2. (At this time, two bearings (TR) 3 and two transfer springs 4 are also removed.)
Do not lose bearings or springs.

(10) Remove connector cover 5 in direction of arrow and then remove four connectors 6 and 7 .

(11) Remove the DC Fan motor.

(12) Remove eight screws = and then remove main chassis unit A.



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3.3.18 Registration roller

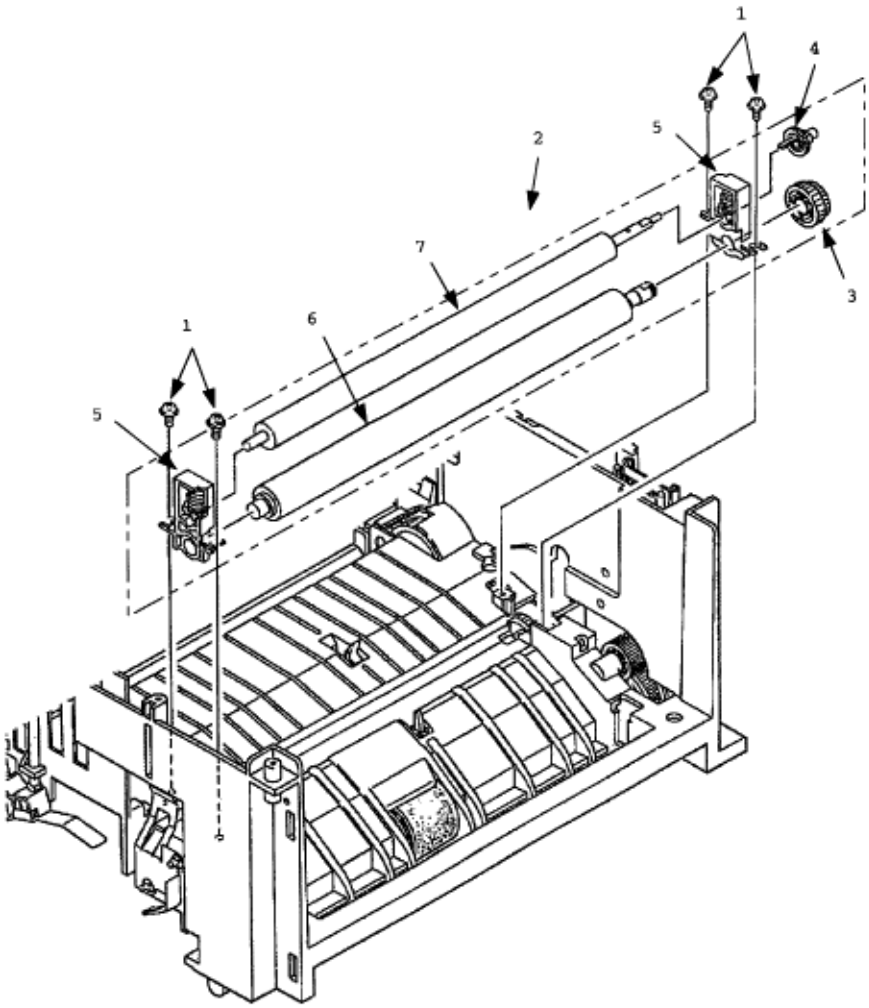
(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the front feeder roller Assembly **(see 3.3.12. (1) to (3)).**

(3) Remove four screws 1. Lift and remove the registration roller Assembly 2, left side first then right side.

(4) Release the latch and remove registration roller gear 3 and pressure roller gear 4.

(5) Remove left and right side registration roller bearing Assemblies 5 and then remove resist roller 6 and pressure roller 7.



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3.3.19 Drum motor

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the main chassis unit **(see 3.3.17).**

(3) Remove the registration roller Assembly **(see 3.3.18 (1) to (3)).**

(4) Remove fuser Assembly.

(5) Release the latch of fuser pressure roller release lever 1 and pull out it toward the right. (At this time, idle gear H 2 is also removed.)

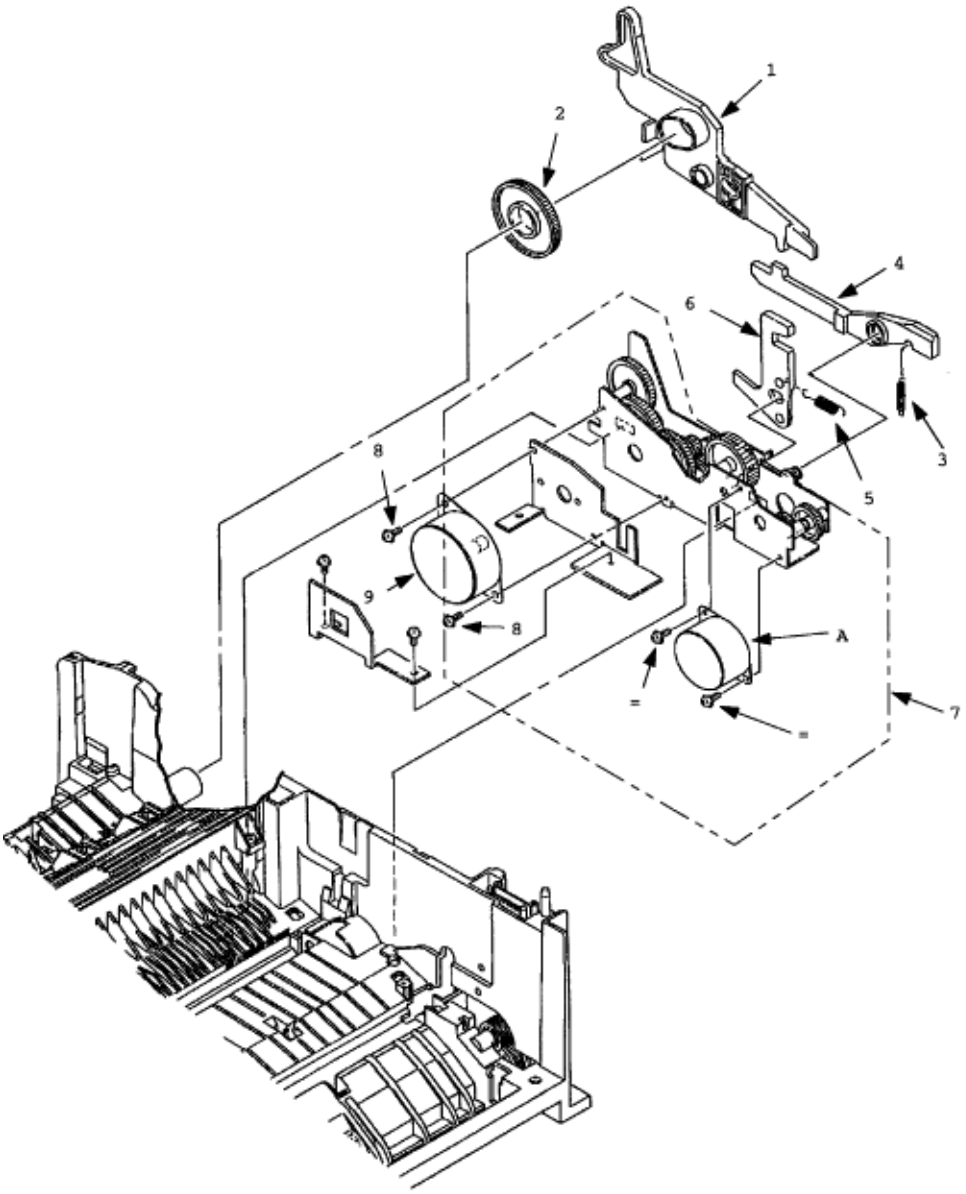
(6) Remove spring 3 and then remove pressure release lever 4. Be careful, do not lose or damage spring.

(7) Remove EP lock spring 5 and then remove ED lock lever 6.

(8) Release two latches and remove motor Assembly 7.

(9) Remove two screws 8 and then remove drum motor 9 and heat sink.

(10) Remove two screws = and then remove registration motor A.



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3.3.20 Idle gear

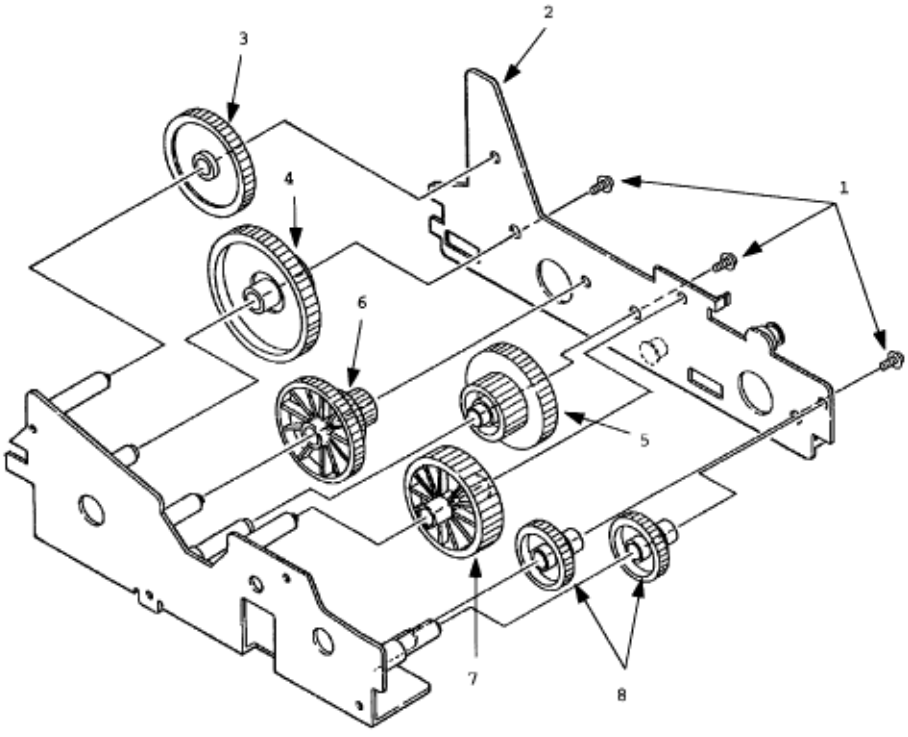
(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the main chassis unit **(see 3.3.17).**

(3) Remove the motor Assembly **(see 3.3.19 (1) to (8)).**

(4) Remove three screws 1 and then remove motor bracket B 2.

(5) Remove idler gear E 3, idle gear D 4, idle gear B 5, idle gear C 6, idle gear A 7, and two resist idle gears 8.



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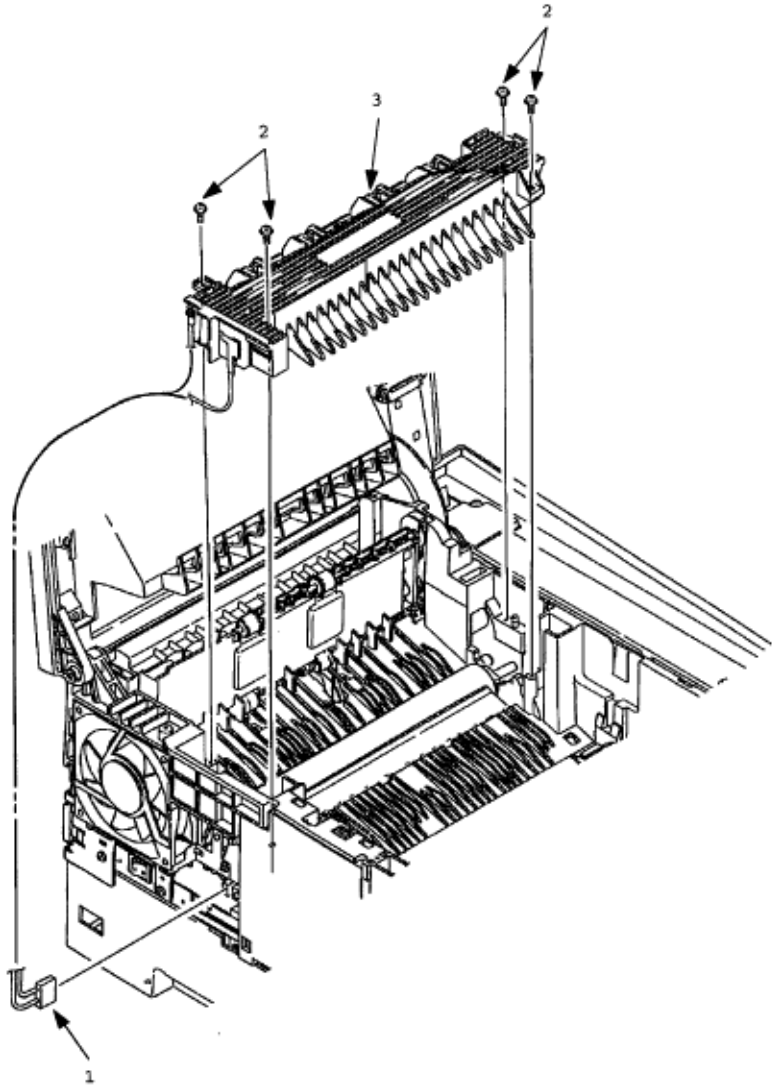
3.3.21 Fusing Assembly

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the side cover (L) Assembly **(see 3.3.1 (1) to (3)).**

(3) Unplug connector 1.

(4) Remove four screws 2 and then remove fusing Assembly 3.



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3.3.22 Fuser pressure roller

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

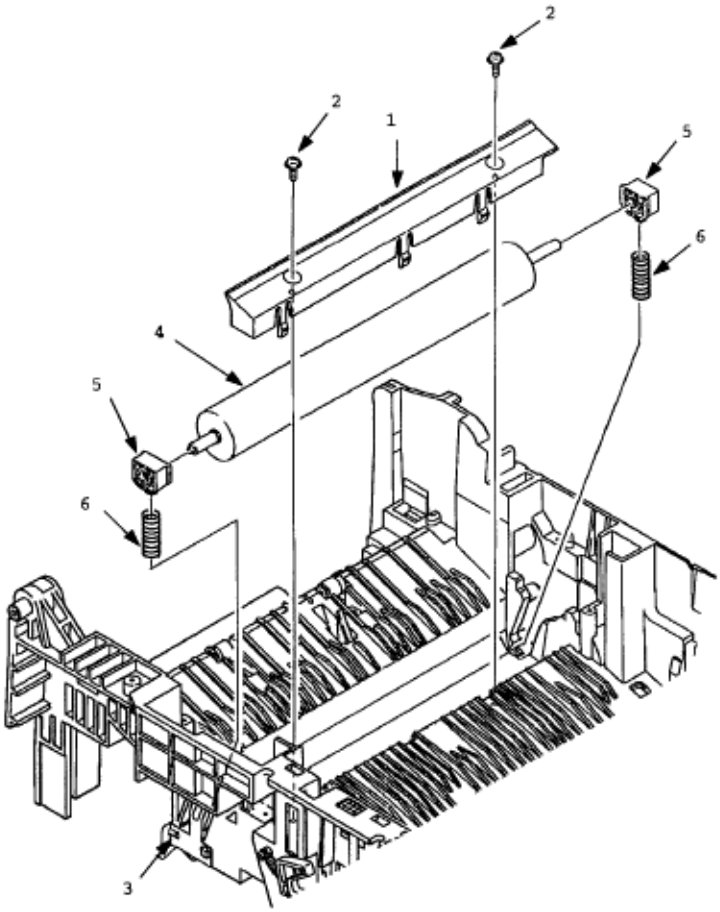
(2) Remove the main chassis unit **(see 3.3.17).**

(3) Remove the fusing Assembly **(see 3.3.21).**

(4) Remove the fuser pressure roller release lever **(see 3.3.19 (5)).**

(5) Remove two screws 2 and release three locks on the fusing guide. Remove the fusing guide 1 by pushing it upward from the lower side.

(6) Release the engagement with earth plate L (BK) 3. Lift and remove fuser pressure roller 4. (At this time, two fuser pressure roller bearings 5 and two bias springs 6 are also removed.)



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3.3.23 EP lock shaft

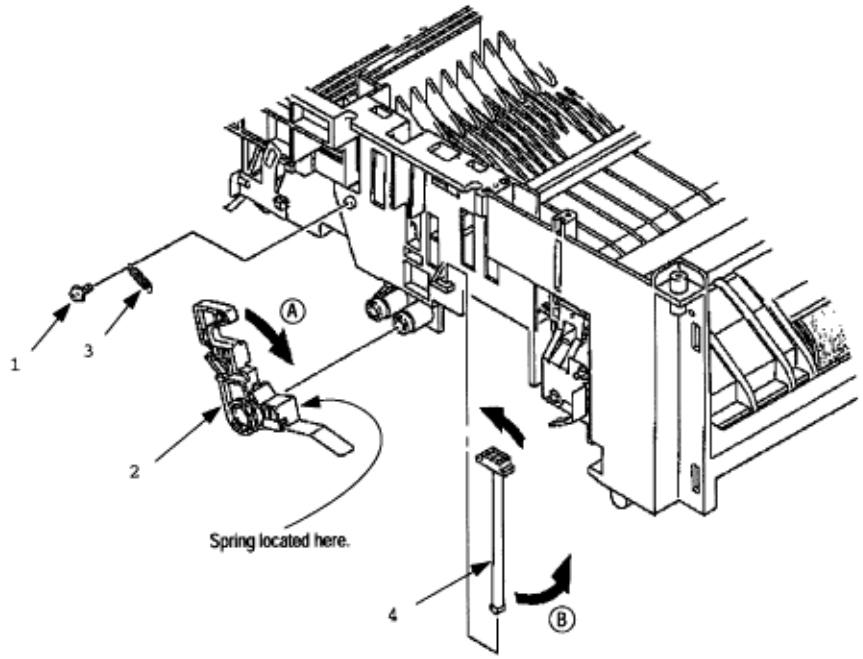
(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the main chassis unit **(see 3.3.17).**

(3) Remove screw 1. Turn EP lock level (L) Assembly 2 in the direction of arrow A .

(4) Remove spring 3.

(5) Drop EP lock shaft 4 down and turn in the direction of arrows B and remove it.



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3.3.24 Hopping roller Assembly

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

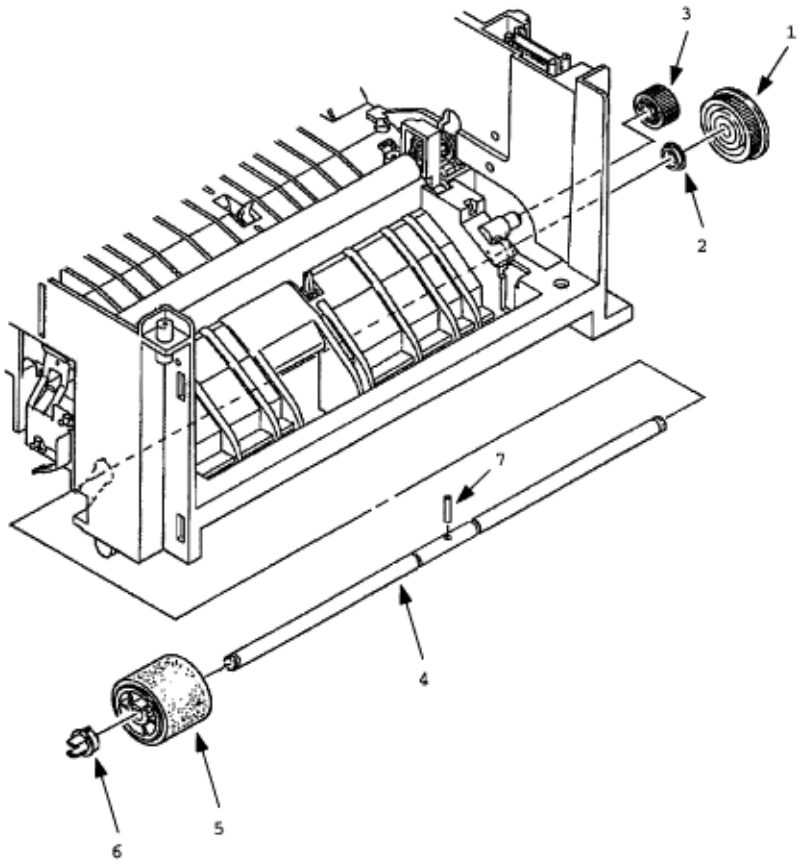
(2) Remove the main chassis unit **(see 3.3.17).**

(3) Release the latch. Remove hopping roller gear 1 and bearing P 2. Then, remove idle gear HF 3.

(4) Remove the left side of hopping roller shaft 4 from the groove. Pull out hopping roller shaft 4 and hopping roller Assembly 5 toward the left..

(5) Release the latch and remove bearing L 6.

(6) Release the latch and remove hopping roller Assembly 5. (At this time, knock pin 7 is also removed. Be careful not to lose the knock pin.)



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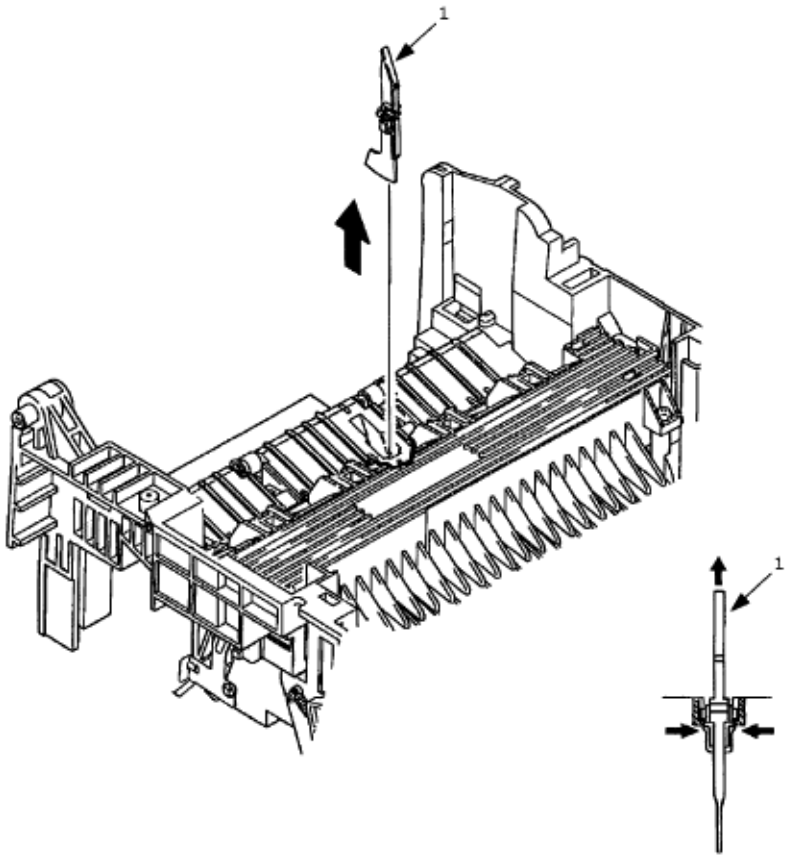
3.3.25 Outlet sensor lever

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the main chassis unit **(see 3.3.17).**

(3) Press the clamp part of outlet sensor lever 1. Remove the outlet sensor lever 1 by pushing it upward from the lower side.



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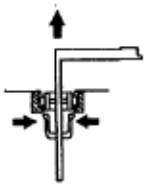
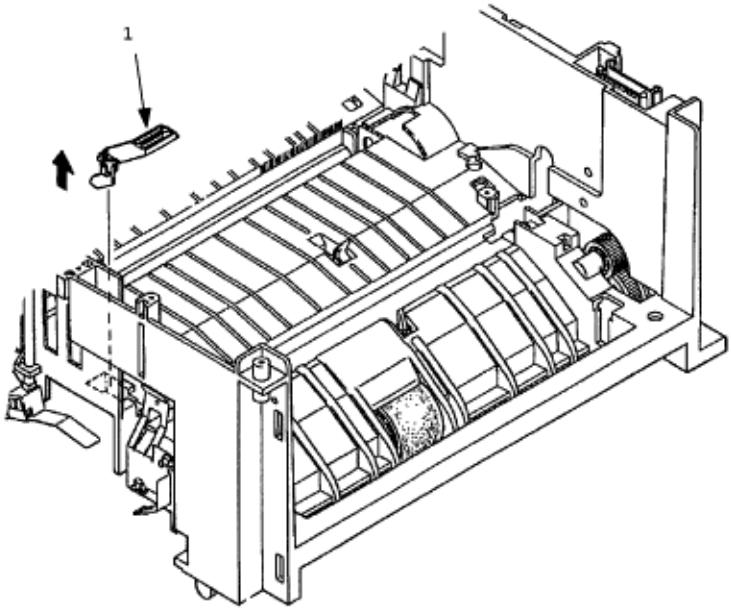
3.3.26 Toner sensor lever

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the main chassis unit **(see 3.3.17).**

(3) Squeeze the clamp part of toner sensor lever 1 and remove the toner sensor lever 1 by pushing it upward from the lower side.





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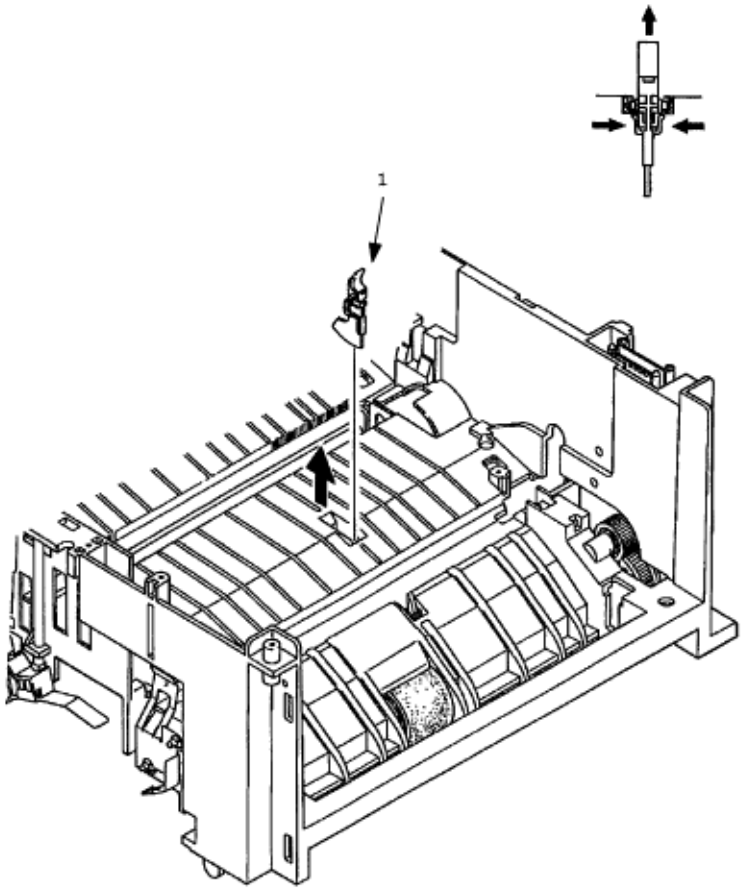
3.2.27 Paper sensor lever

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the main chassis unit **(see 3.3.17).**

(3) Squeeze the clamp part of the paper sensor lever 1. Remove the paper sensor lever 1 by pushing it upward from the lower side.



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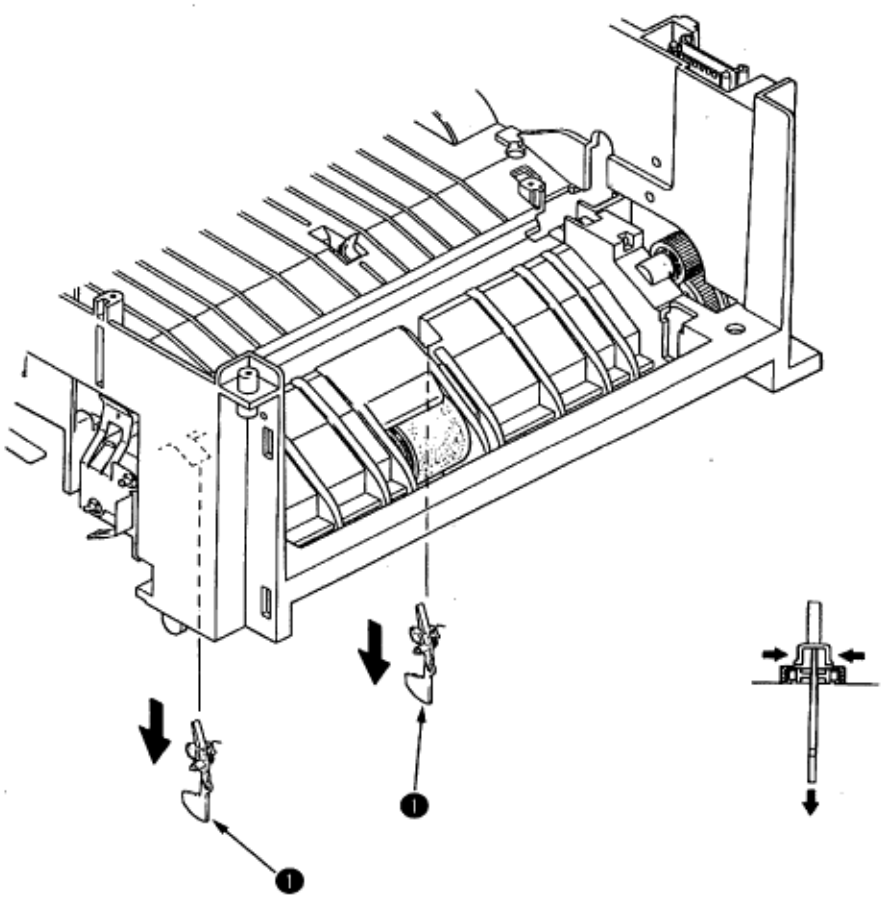
3.3.28 Inlet sensor lever

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the main chassis unit **(see 3.3.17).**

(3) Squeeze the clamp part of two inlet sensor levers 1. Remove the inlet sensor levers 1 by pushing them downward.



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3.3.29 Power Supply Board / Insulator

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the main chassis unit **(see 3.3.17).**

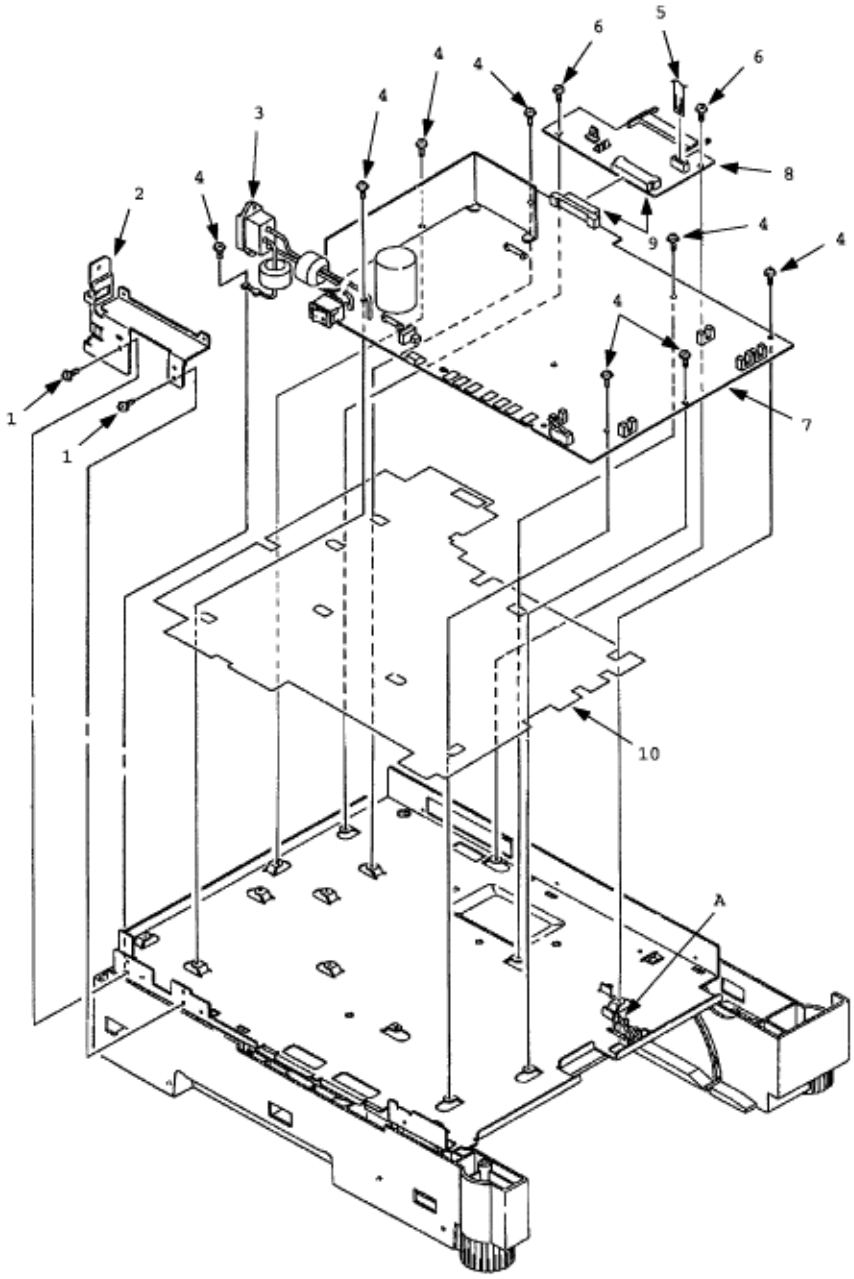
(3) Remove two screws 1 and then remove inlet holder 2. At this time, remove inlet 3 from inlet holder 2.

(4) Remove eight screws 4, connector 5, and two screws 6. Remove Power Supply Board 7 together with AOLC-PCB 8.

(5) Unplug connector 9 and remove PowerSupply Board 7.

(6) Remove insulator 10.

Caution: Be careful not to deform the paper end lever A.



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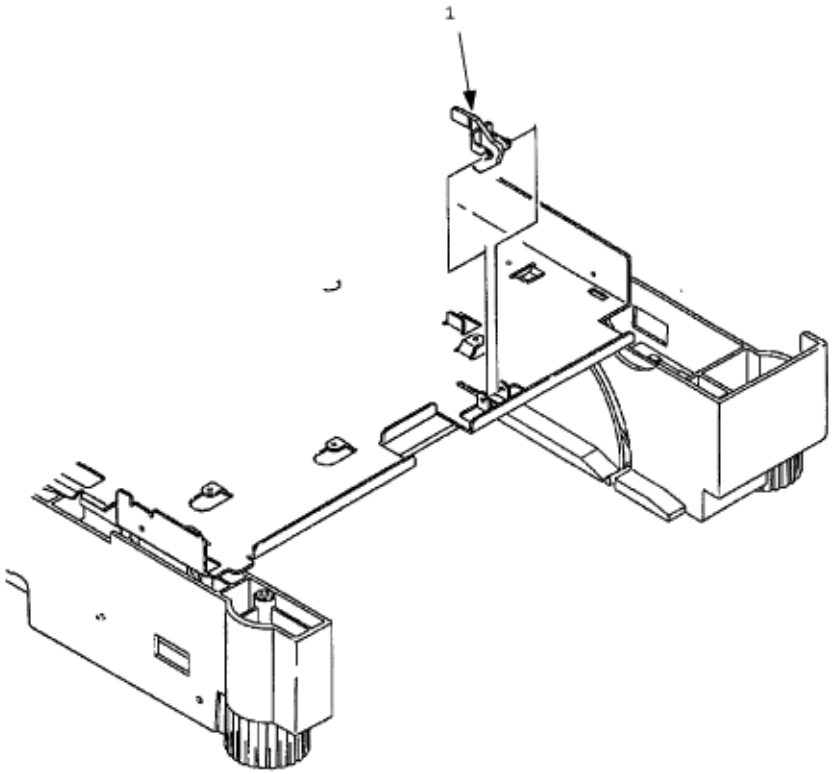
3.3.30 Paper end lever

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the main chassis unit **(see 3.3.17).**

(3) Release the lock and remove paper end lever 1.



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3.3.31 Guide rail (L) Assembly

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the main chassis unit **(see 3.3.17).**

(3) Remove the insulator **(see 3.3.29).**

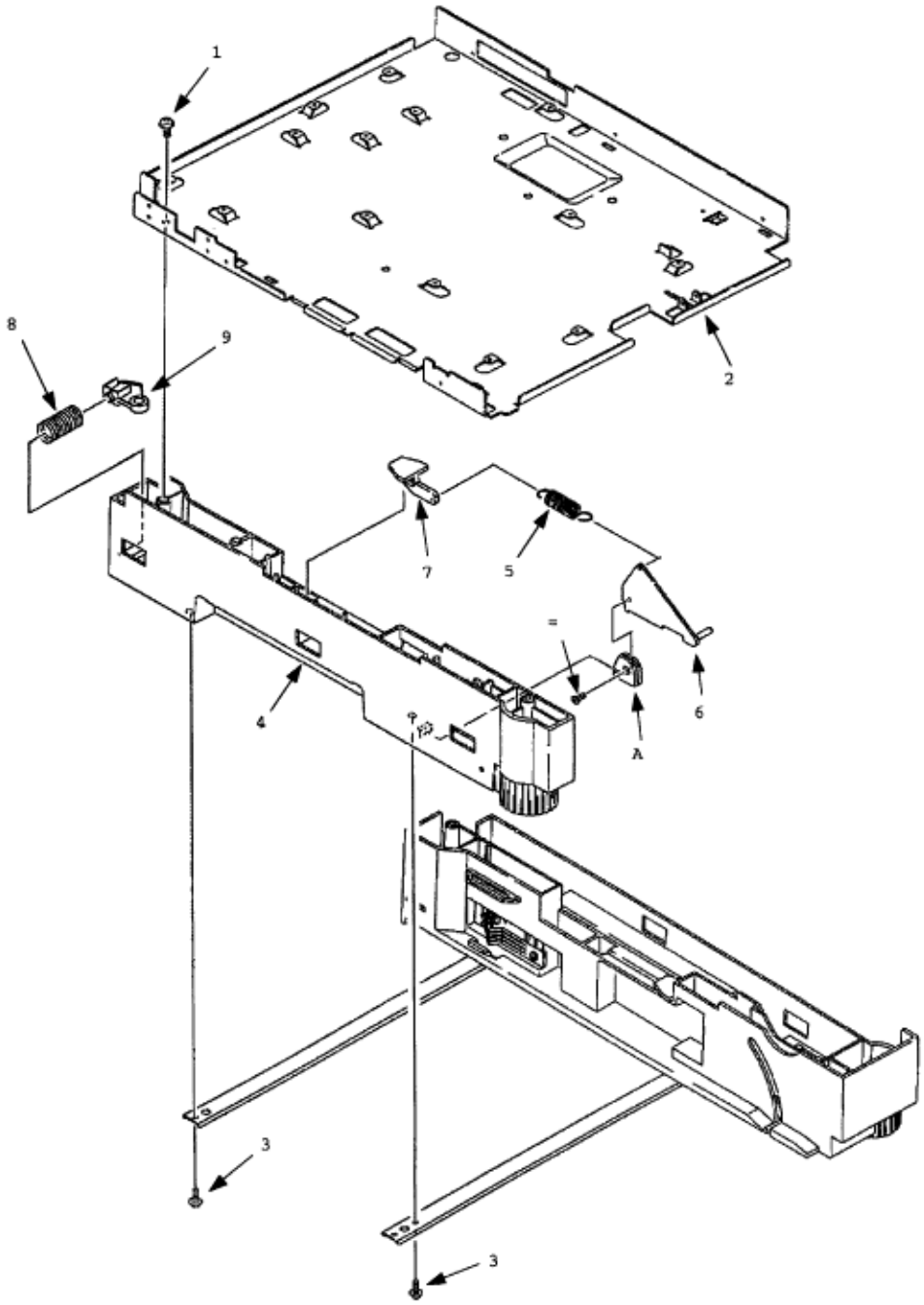
(4) Remove screw 1 and then remove base plate 2.

(5) Remove two screws 3 and then remove guide rail (L) Assembly 4.

(6) Remove cassette lock spring 5 and then remove bias link 6 and pull block 7.
(Pay attention the direction of hook of cassette lock spring 5.)

(7) Remove spring 8 and then remove cassette stopper 9.

(8) Remove screw 0 from bias link 6 and then remove link support A.



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3.3.32 Guide rail (R) Assembly

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove the main chassis unit **(see 3.3.17).**

(3) Remove the insulator **(see 3.3.29).**

(4) Remove screw 1 and then remove base plate 2.

(5) Remove two screws 3 and then remove guide rail (R) Assembly 4.

(6) Remove cassette lock spring 5 and then remove bias link 6 and pull block 7 (At this time, earth plate 8 is also removed.)

(Pay attention the direction of hook of cassette lock spring 5.)

(7) Remove spring 9 and then remove cassette stopper =.

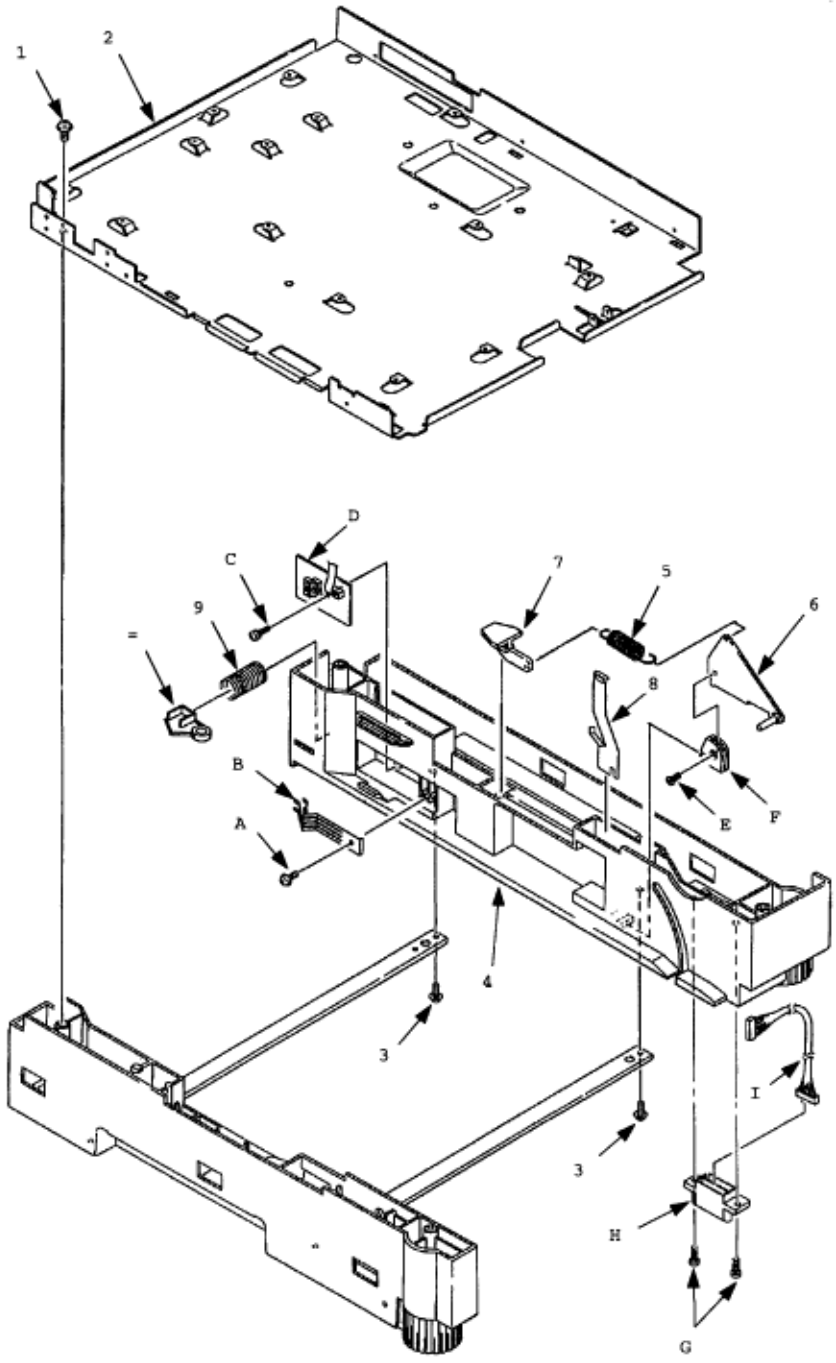
(8) Remove screw A and then remove detector spring B.

(9) Remove screw C and then remove AOLS-PCB D.

(10) Remove screws E from bias link 6 and then remove link support F.

(11) Remove two screws G and then remove square cord from square-shaped connector H.

(12) Using a dedicated tool, remove connector cord I from square-shaped connector H.



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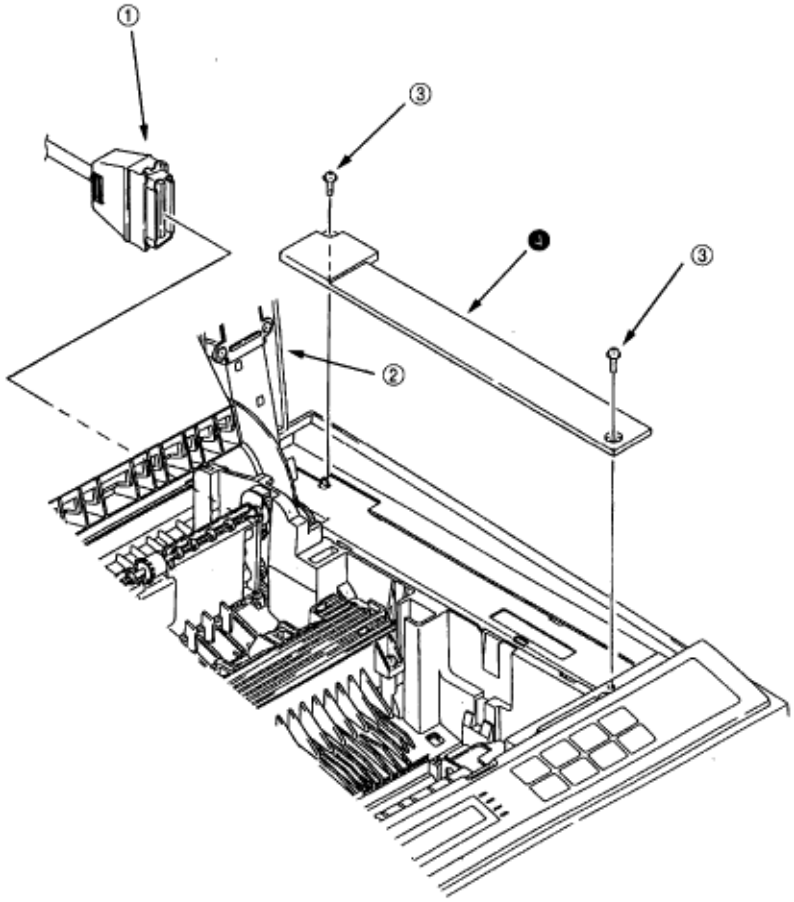
3.3.33 Cover Frame

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Remove interface cable 1.

(3) Open stacker cover 2. Remove two screws 3 and then remove Cover Frame 4.



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3.3.34 LED head

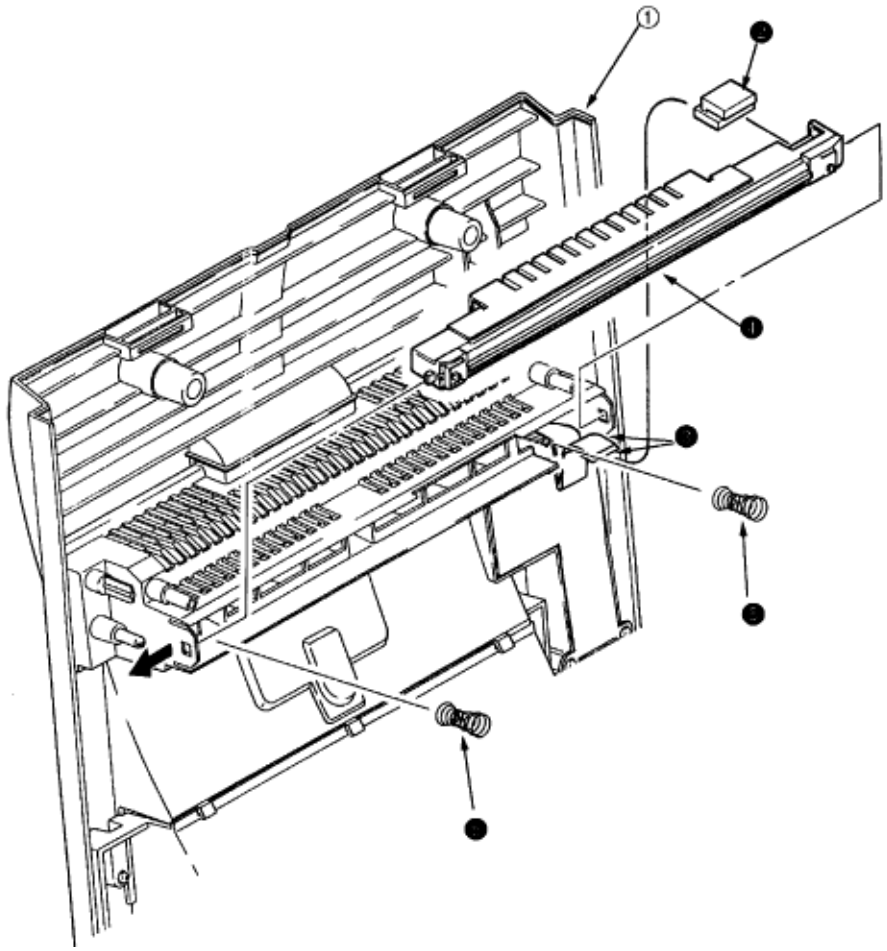
(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Open stacker cover 1.

(3) Remove PC connectors 2 and two LED cables 3 from LED head 4.

(4) Push the hook on the left side of stacker cover 1 in the direction of arrow and remove LED head 4. (Take care not to lose head springs 5.)

(5) Pull out the head spring 5 from the post.



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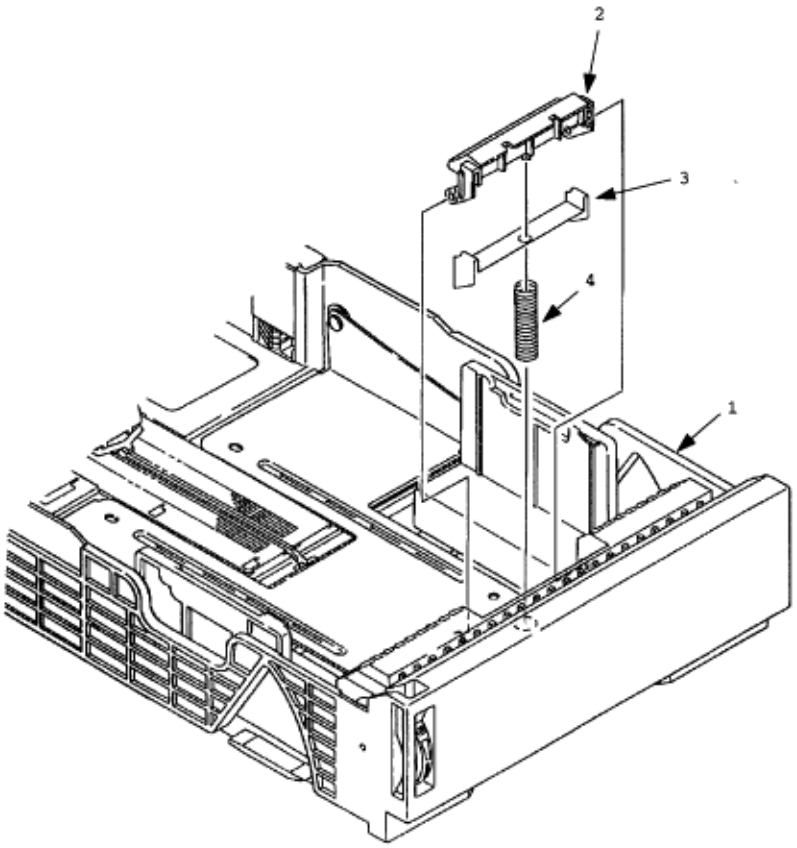
3.3.35 Separator Assembly

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Pull out the paper cassette Assembly 1 from the printer.

(3) Release two locks and remove separator Assembly 2. (At this time, leaf spring 3 and coil spring 4 are also removed. Be careful not to lose these springs.)



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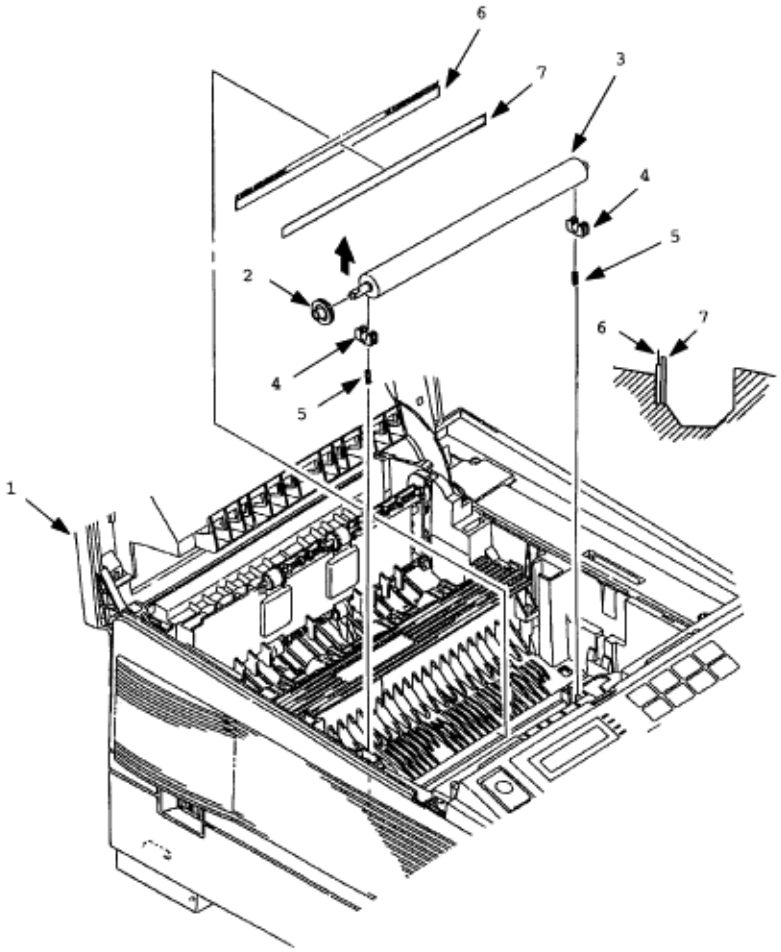
3.3.36 Transfer roller

(1) Turn the AC power switch off. Unplug the AC power cord from the outlet.

(2) Open stacker cover 1.

(3) Lift the left side of the gear TR 2 and release the lock. Remove gear TR 2 and transfer roller 3. (At this time, two bearings (TR) 4 and two transfer roller springs 5 are also removed.)

(4) Remove diselectrification bar 6 and diselectrification film 7 from the chassis unit.



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4. ADJUSTMENT

This chapter explains the adjustment necessary when replacing a part. Adjustment is made by changing a parameter value set in EEPROM on the controller PCB. A parameter is set with the key operation on the operator panel. This printer has three kinds of maintenance modes. It is required to select one of the maintenance modes necessary when replacing a part.

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4.1 Maintenance Modes And Functions

- **User maintenance mode**

To enter the user maintenance mode, turn on the POWER switch while pressing the MENU key.

Function

There are seven functions as follows.

- Menu reset
- Hex dump
- Drum counter reset
- Operator panel menu disable
- X adjust
- Y adjust
- Setting

- **System maintenance mode**

Note: This mode is used only by service persons and it should not be released to the end-users.

To enter the system maintenance mode, turn on the POWER switch while pressing the RECOVER key.

Function

There are 8 functions as follows.

- Page count display
- Page count printing enable/disable
- Rolling ASCII continuous printing
- EEPROM reset
- HSP ERROR recovery

- HSP ERROR count display
- HSP ERROR count reset
- SIDM enable/disable

- Engine maintenance mode

  Note: This mode is used only by service persons and it should not be released to the end-users.

  To enter the engine maintenance mode, turn on the POWER switch while pressing the FORM FEED key and ENTER key.

  Function

  There are 15 functions as follows.

  - Head drive time setting
  - Setting of Head drive timing compensation while OST is on.
  - Compensated head type setting
  - Printing start position setting
  - Drum counter total display
  - Drum count display
  - Setting of standard paper feed length
  - Setting of front feeder paper feed length
  - Setting of second tray paper feed length
  - Selection of second tray feeder download table
  - Setting of envelope feeder paper feed length
  - Selection of envelope feeder download table
  - Fuser count indication
  - Fuser count reset
  - Engine reset

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4.1.1 User maintenance mode

- To enter the user maintenance mode, turn the power supply ON while pressing the Menu key.
- This mode uses the menu for function selection.
- The user maintenance mode provides the following functions:

(1) Menu reset

- All settings for Menu level-1 are reset to the factory default values.
  The menus for all executable emulations including options are reset to the factory default values.
- The operation mode starts automatically upon completion of resetting.

(2) Hex dump

- The data received from the host is dumped in hexadecimal notation to the printer.
- Printing is activated automatically when the received data exceeds one page. If the received data is less than one page, printing can be activated manually by pressing the Form Feed key after selecting the OFF LINE mode by pressing the ON-LINE key. (Automatic activation of printing even when the received data is less than one page by selecting the Auto Eject function on the menu.)
- Exit from this mode by turning the power OFF.

(3) Drum counter reset

- This function resets the drum life data when the user replaces the image drum unit.
- The operation mode starts automatically upon completion of resetting.

(4) Operator panel menu disable

- This function is for enabling and disabling the operator panel menu functions (Menu 1, Menu 2, Tray Select, Copies and Paper Size).

(5) X ADJUST

- This function is used to adjust the printing start position within the range of ±2 mm in 0.25 mm steps in the X direction.

(6) Y ADJUST

- This function is used to adjust the printing start position within the range of ±2 mm in 0.25 mm steps in the Y direction.

(7) SETTING

- This function is used to improve print quality.

-2 }	Rough/thick paper, Low temperature/humidity and/or blotchy faded print appeared.
-1 }	
0	Normal media/environmental conditions.
+1 }	
+2 }	Rough papers, high temperature/humidity and/or snowy print of high density pattern.

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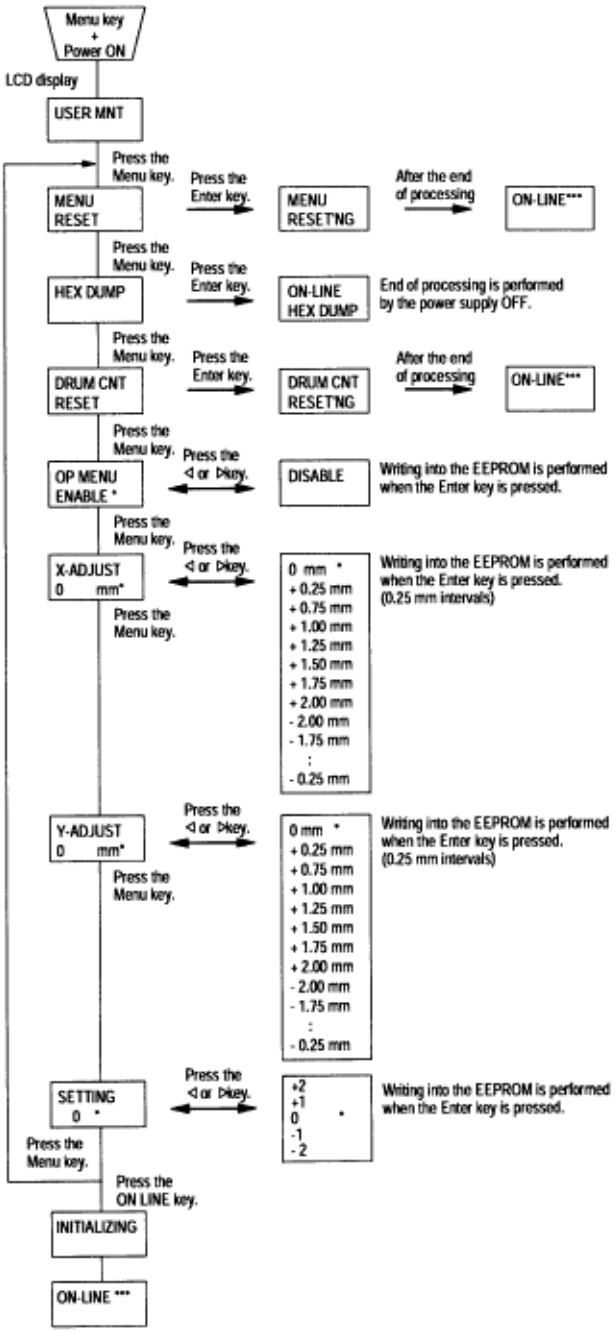
User maintenance mode menu system



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4.1.2 System maintenance mode

- The system maintenance mode is set when the power is turned ON while pressing the Recover key.
- This mode adopts the menu for function selection.
- The system maintenance mode is provided with the listed functions.

(1) Page count display

- The total number of pages counted at the engine is displayed on the LCD.

(2) Page count printing enable/disable

- This function selects whether to include (enable) or exclude (disable) the total number of printed pages counted at the engine at the time of menu printing.

(3) Rolling ASCII continuous printing

- The rolling ASCII pattern is printed continuously for various engine tests.
- Press the ON-LINE key to cancel this mode.

(4) EEPROM reset

- All EEPROM areas (including Menu level-2) are set to the factory default values.
- The following items are excluded
  Head drive time setting

  Fine adjustment of printing start position

  Standard tray paper feed amount setting
- Transition to the operation mode occurs upon completion of resetting.
- Press the Menu key to update each category.
  The operation returns to the first category after updating the last category.

(5) HSP ERROR recovery

- Select HSP ERROR recovery function either recover or stop.

(6) HSP ERROR count

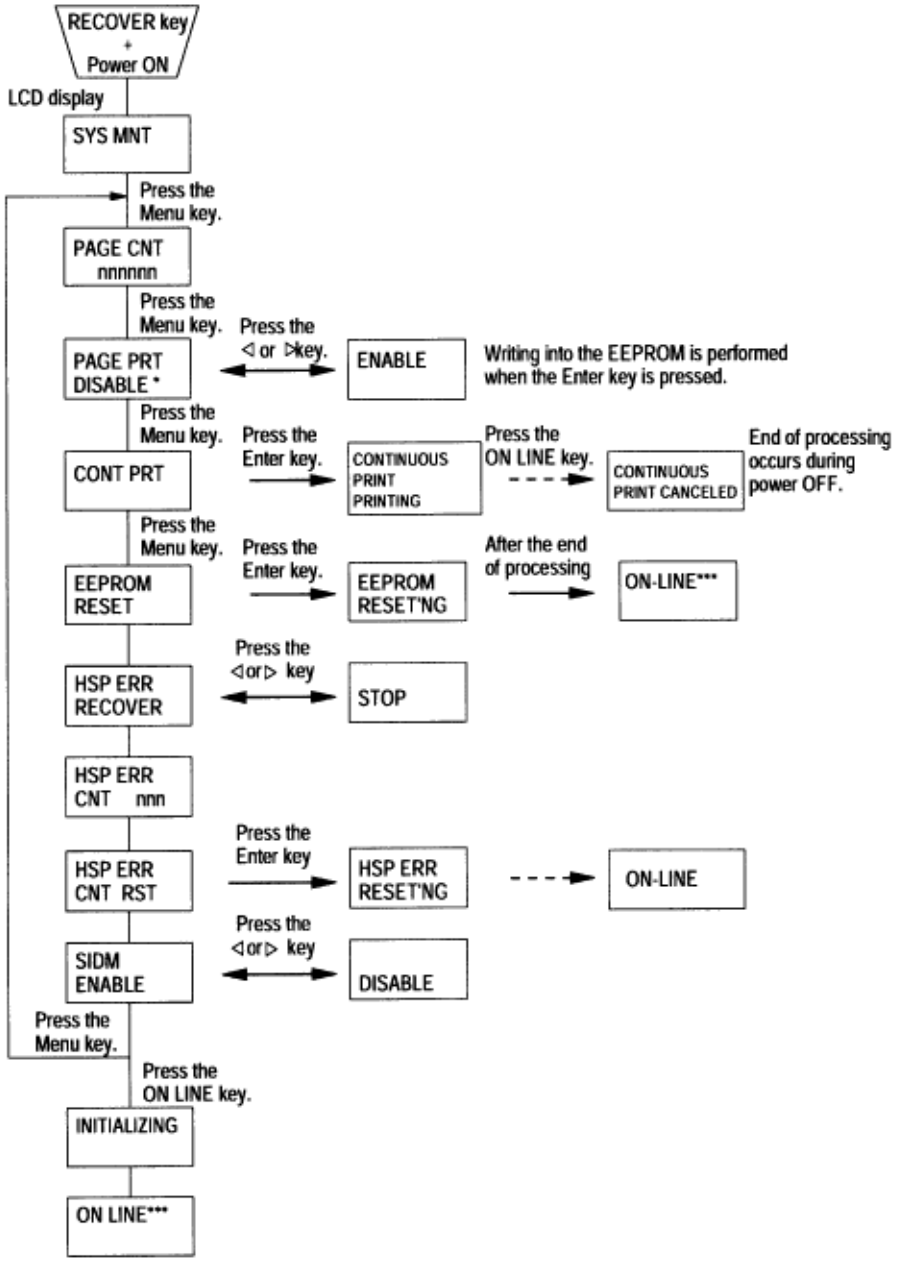
- Display total HSP ERROR count.

(7) HSP ERROR count reset

- Reset the HSP ERROR counter.

(8) SIDM enable/disable

- If it's selected disable, cannot select SIDM emulations by Menu.



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4.1.3 Engine maintenance mode

- The engine maintenance mode is activated when the power is turned ON while pressing to the Form Feed key and Enter key.
- This mode adopts the menu for function selection.
- The method for exit from this mode depends on the setting.
- The engine maintenance mode is provided with the following functions:

(1) Head drive time setting

- Sets the drive time of the LED head.

(2) Setting of Head drive timing compensation while OST is on.

- This function sets head drive timing compensation level while OST is on at 600 DPI mode.

(3) Compensated head type setting

- This function sets type of the compensated head.

(4) Printing start position setting

- Sets the printing start position.

(5) Drum count total display

- Displays on the LCD the total number of drum revolutions in the unit counted at the engine.

(6) Drum count display

- Displays on the LCD the total number of EP drum revolutions counted at the engine.

(7) Setting of standard tray paper feed length

- This function sets the paper feed length of standard tray paper.

(8) Setting of front feeder paper feed length

- This function sets the paper feed length of the front feeder.

(9) Setting of High Capacity Second Paper Feeder paper feed length

- This function sets the paper feed length of the High Capacity Second Paper Feeder.

(10) Selection of High Capacity Second Paper Feeder download table

- This function selects the download table for the High Capacity Second Paper Feeder.

(11) Setting of Multi Feeder paper feed length

- This function sets the paper feed length of the Multi Feeder.

(12) Selection of Multi Feeder download table

- This function selects the download table for the Multi Feeder.

(13) Fuser count display

- Displays on the LCD the total number of printed pages counted at the engine.

(14) Fuser count reset

- When the fuser unit is replaced, the maintenance person uses this fuser count reset function to reset the fuser lifetime.
- After the fuser counter is reset, the engine enters into the operation mode automatically

(15) Engine reset

- All EEPROM areas used by the engine are reset to the factory default values.
- The following items are excluded:

  Menu level-1

  Menu level-2

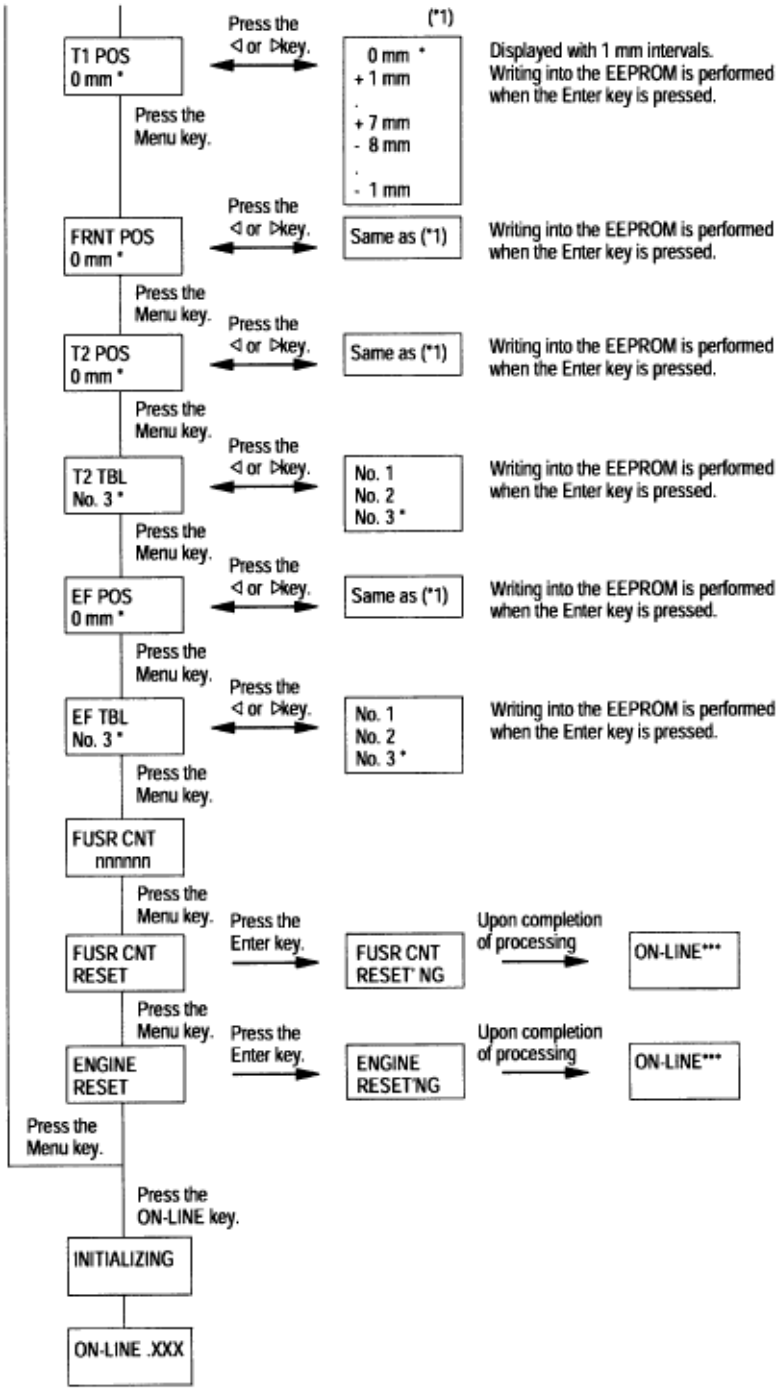
  Operator panel menu disable/enable

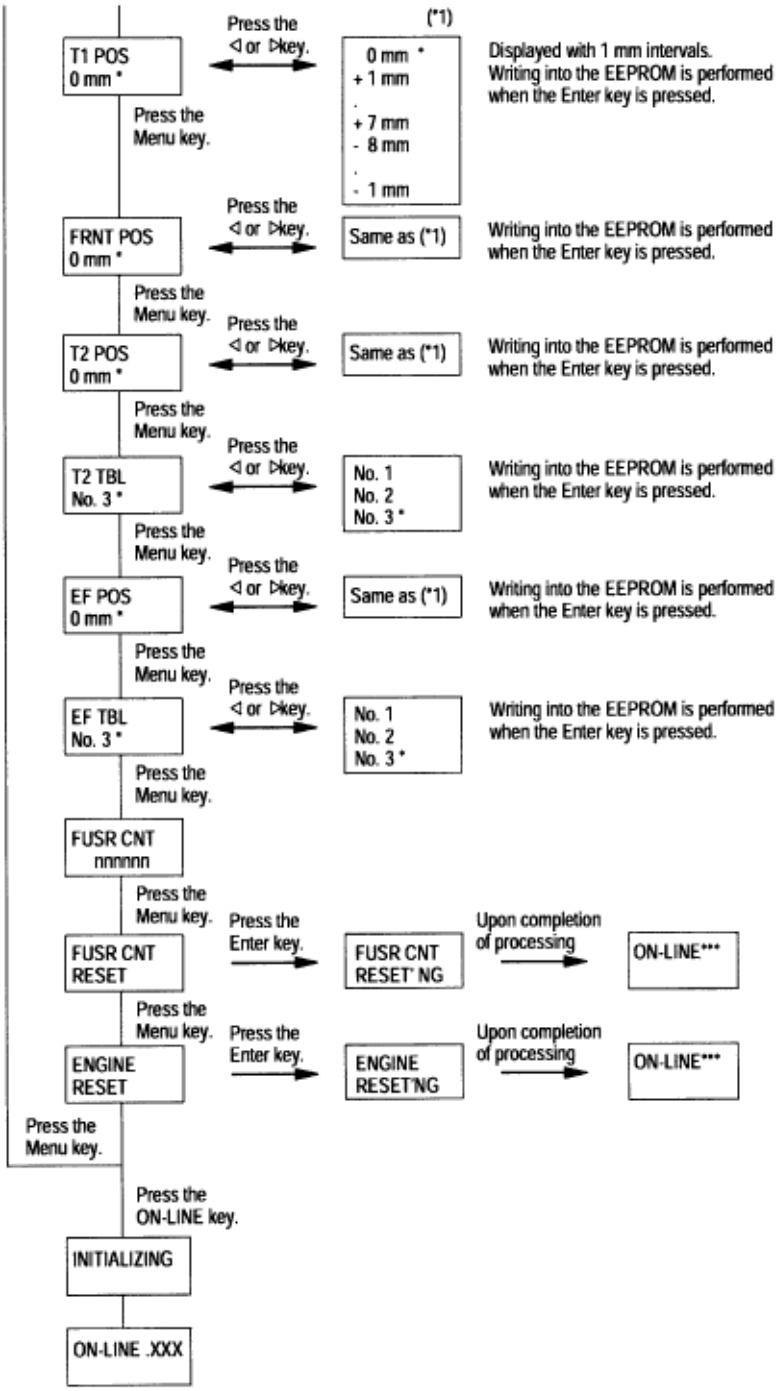
  Page print disable/enable

- Transition to the operation mode occurs upon completion of resetting.

Note: Do not change the default value of (2), (5), (8) ~ (13) they are the parameter for adjusting in the factory.

- Engine maintenance mode menu system


(*1)
Press the ◁ or ▷key.
T1 POS
0 mm *
0 mm *
+ 1 mm
.
+ 7 mm
- 8 mm
.
- 1 mm
Displayed with 1 mm intervals.
Writing into the EEPROM is performed when the Enter key is pressed.
Press the Menu key.
FRNT POS
0 mm *
Same as (*1)
Writing into the EEPROM is performed when the Enter key is pressed.
T2 POS
0 mm *
T2 TBL
No. 3 *
No. 1
No. 2
No. 3 *
EF POS
0 mm *
EF TBL
No. 3 *
FUSR CNT
nnnnnn
Press the Enter key.
FUSR CNT RESET
FUSR CNT RESET'NG
Upon completion of processing
ON-LINE***
ENGINE RESET
ENGINE RESET'NG
Press the Menu key.
Press the ON-LINE key.
INITIALIZING
ON-LINE .XXX



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4.1.4 EEPROM initialization

The corresponding area of the EEPROM is initialized for each event as shown Table 4-1.

Table 4-1

EEPROM area / Event	Menu level 1	Menu level 2	F/W revision area	Information for destination	Engine area	Drum counter	Fuser counter	Page counter	XY adjust	LED head drive time	Remarks
Menu resetting for user maintenance	j										
EEPROM resetting for system maintenance	j	j							j		
Engine resetting for engine maintenance					j	j	j	j			
Firmware revision check error LCD display: EEPROM RESETTING	j	j	j						j		This intialization occurs when the existing ROM is replaced by a ROM whose revision No. is different from the existing ROM.
Engine revision error LCD display: ENGINE RESET					j	j	j	j		j	This intialization occurs when a new EEPROM is mounted.
Engine ID error LCD display: ENGINE RESET					j	j	j	j		j	
Setting of data for destination	j	j		j					j		
User information error LCD display: EEPROM RESETTING	j	j		j					j		This resetting occurs when irregular user information is detected.

j : shows initialization

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4.2 Adjustment When Replacing A Part

Adjustment becomes necessary when replacing one of the following parts.

Part Replaced	Adjustment
LED Head	Set the LED head drive time. **(Refer to Chapter 4.2.1)**
Image Drum Cartridge	Reset the image drum counter. (Refer to User's manual)
Fuser Unit	Reset the fuser counter. **(Refer to Chapter 4.2.2)**
EEPROM	Set the LED head drive time. **(Refer to Chapter 4.2.1)**

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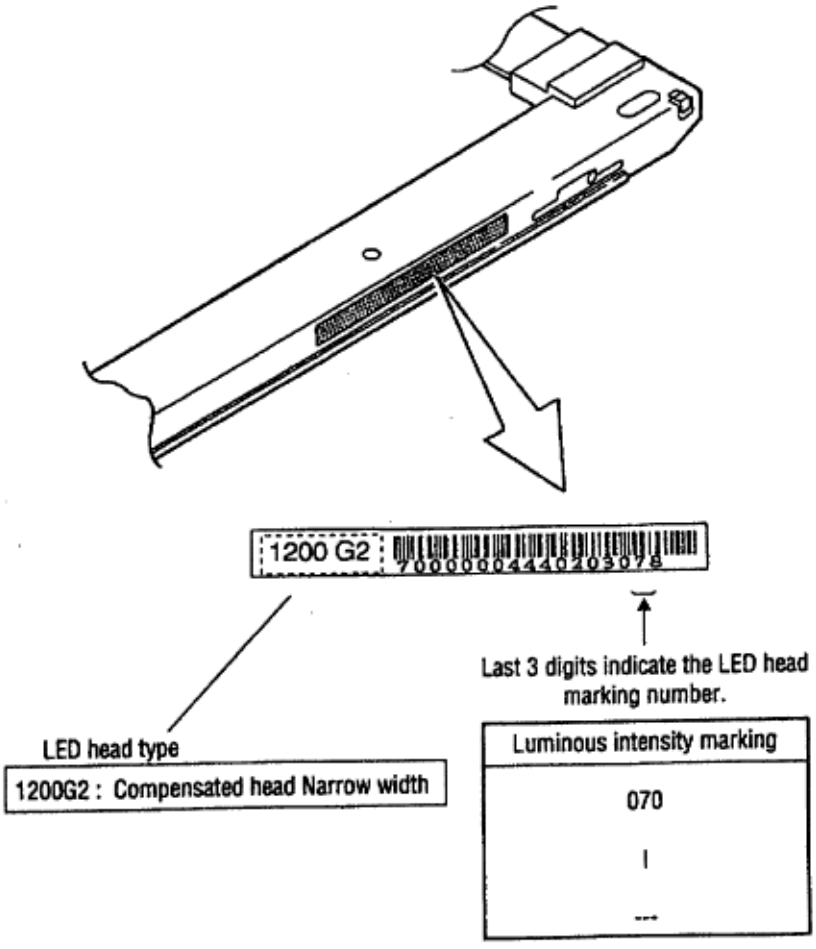
4.2.1 Setting of LED head drive time

Note: When the luminous intensity marking of the replaced LED head (new part) is the same as that of the used LED head (old part), do not set the LED head drive time.

- Luminous intensity marking label

(1) Normal Type LED HEAD



- Setting of LED head drive time

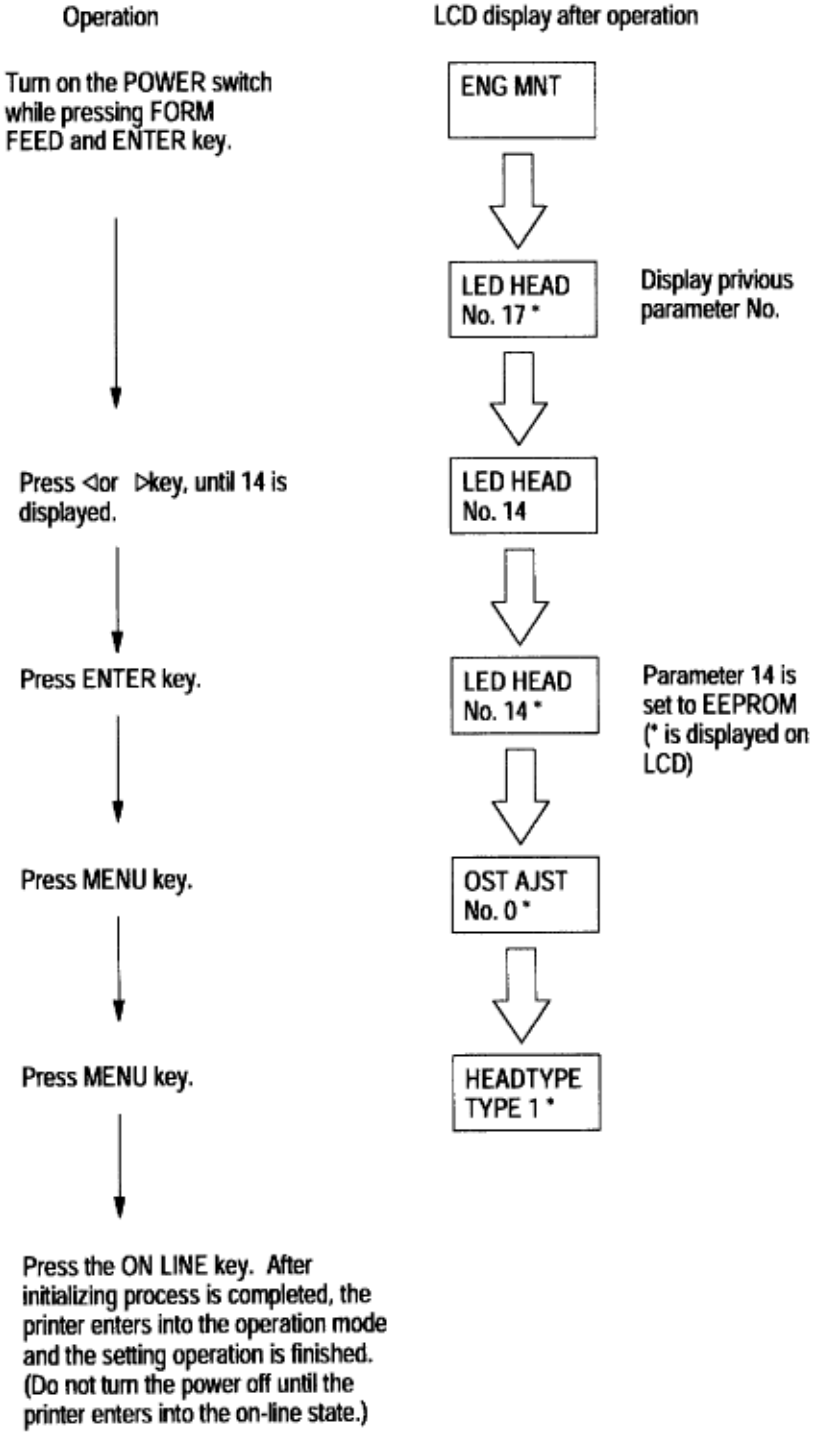
Drive time of the LED head is to set parameter of drive time setting values corresponding to the lumious intensity displays marked on the LED head to EEPROM.

a. Corresponding table of lumious energy display and drive time parameter

Luminous intensity display on LED head	Drive time parameter	Luminous intensity display on LED head	Drive time parameter
0.27 ~ 0.28	25	0.61 ~ 0.64	13
0.29 ~ 0.30	24	0.65 ~ 0.69	12
0.31 ~ 0.32	23	0.70 ~ 0.73	11
0.33 ~ 0.35	22	0.74 ~ 0.79	10
0.36 ~ 0.37	21	0.80 ~ 0.84	9
0.38 ~ 0.40	20	0.85 ~ 0.90	8
0.41 ~ 0.43	19	0.91 ~ 0.96	7
0.44 ~ 0.46	18	0.97 ~ 1.03	6
0.47 ~ 0.49	17	1.04 ~ 1.10	5
0.50 ~ 0.52	16	1.11 ~ 1.18	4
0.53 ~ 0.57	15	1.19 ~ 1.26	3
0.58 ~ 0.60	14	1.27 ~ 1.35	2

b. Setting

Example: Setting method the parameter to 14 (in case of privous parameter is 17).


Operation
LCD display after operation
Turn on the POWER switch while pressing FORM FEED and ENTER key.
ENG MNT
LED HEAD No. 17 *
Display privious parameter No.
Press ◁or ▷key, until 14 is displayed.
LED HEAD No. 14
Press ENTER key.
LED HEAD No. 14 *
Parameter 14 is set to EEPROM (* is displayed on LCD)
Press MENU key.
OST AJST No. 0 *
Press MENU key.
HEADTYPE TYPE 1 *
Press the ON LINE key. After initializing process is completed, the printer enters into the operation mode and the setting operation is finished. (Do not turn the power off until the printer enters into the on-line state.)

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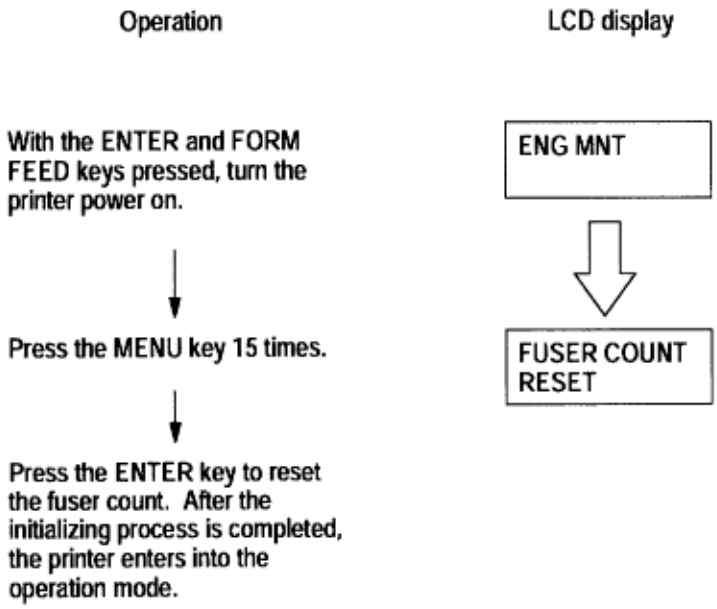
4.2.2 Resetting the fuser counter


Operation
LCD display
With the ENTER and FORM FEED keys pressed, turn the printer power on.
ENG MNT
Press the MENU key 15 times.
FUSER COUNT RESET
Press the ENTER key to reset the fuser count. After the initializing process is completed, the printer enters into the operation mode.

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4.2.3 Destination setting

The desired destination can be set by turning the power on while depressing two keys corresponding to the destination according to the following table.

Destination	Keys to be depressed
ODA	MENU, >
OEL	MENU, <
OKI-INT-A (Australia, etc.)	MENU, PAPER SIZE
OKI-INT-L (Singapore, etc.)	MENU, TRAY TYPE

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5.1 Periodic Part Replacement

As specified below, the parts shall be replaced periodically.

Part name	Condition for replacement	Cleaning	Remarks
- Toner cartridge	5,000	- LED head.	Consumables
- Image drum cartridge	30,000	- LED head.	Consumables

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5.2 Cleaning

Remove any toner and dust. Clean inside and around the printer with a piece of cloth when necessary. Use the handy cleaner (VACUUM) for cleaning the printers interior.

Note: Do not touch image drum, LED lens array, and LED head connector block.

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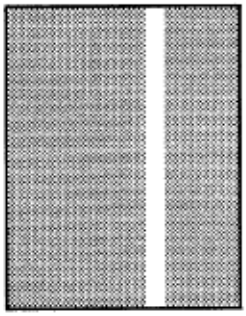
5.2.1 Cleaning of LED lens array

Clean the LED lens array or replace the toner cartridge when white lines or stripes (void, light printing) are generated vertically down the page.

Note: The LED lens array must be cleaned with an LED head cleaner.

White lines or stripes

(void, light printing)



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6.1 Troubleshooting Tips

(1) Check the basic check points covered in the user's manual.

(2) Gather as much information on the problem from the customer as possible.

(3) Perform inspections in conditions close to those in which the problem had occurred.

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6.2 Points to Check before Correcting Image Problems

(1) Is the printer being run in proper ambient conditions?

(2) Have the supplies (toner) and the routine replacement part (image drum cartridge) been replaced properly?

(3) Is the paper normal? See paper specifications section.

(4) Has the image drum cartridge been loaded properly?

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6.3 Tips for Correcting Image Problems

(1) Do not touch, or bring foreign matter into contact with the surface of the image drum.

(2) Do not expose the image drum to direct sunlight.

(3) Keep hands off the fuser unit as it is heated during operation.

(4) Do not expose the image drum to light for longer than 5 minutes at room temperature.

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6.4 Preparation for Troubleshooting

Operator Panel Display

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